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THE CAPE YORK IRONSTONE.

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There is always a peculiar interest attaching to those strange bodies, meteors, which, issuing out of the infinite abyss of universal space, fall upon the earth with loud detonations, accompanied by flashes or trails of brilliant light. When one of these visitors from far off space happens to be a mass of pure soft iron, apparently heaven-sent to supply one of the most indispensable needs of the most northerly human beings on the globe—a tribe of isolated Arctic aborigines numbering only a little over two hundred souls literally ice-imprisoned in the gloomy depths beyond the Arctic Circle—and when the existence of such a mass has been a matter of historic or legendary knowledge since the discovery of the tribe over three-quarters of a century ago, while its precise location has been unknown, the interest is increased tenfold.

Such is the interest attaching to the meteor ironstone of Cape York, which for unknown years furnished the

ancestors of the Arctic Highlanders with the iron for their knives in return for the simple labor of clipping off fragments from the main mass.

On the 9th of August, 1818, Capt. Jno. Ross, R.N., imprisoned with his two ships, the *Isabella* and *Alexander*, in the Arctic ice-pack off the desolate northern shore of Melville Bay, some twenty-five or thirty miles to the eastward of Cape York, was "surprised by the appearance of several men on the ice . . . . drawn on rudely fashioned sledges by dogs, which they continued to drive backwards and forwards with wonderful rapidity."*

After a great deal of manœuvring, for a detailed account of which see Ross's original narrative of his voyage, communication was established with these individuals of a hitherto unknown tribe of Hyperboreans, and they were induced to come on board the ships.

Among the scanty possessions of these natives were crude bone knives with cutting edges of iron. The discovery of this metal in the hands of these isolated aborigines, who had never seen white men before, and had no idea of the existence of human beings beyond their own tribe, naturally excited comment. It was supposed that the metal had been obtained from some fragments of wreckage, and Ross's armourer thought the knives were made from pieces of iron hoop or flattened nails. A little later, however, it was understood from the natives that the iron was procured from a mountain near the shore, and that they cut off it with

* Voyage of Discovery, &c., &c., by Jno. Ross, Capt. R.N., London, 1819—4to, page 80.

a sharp stone the pieces from which the blades of their knives were made.

The further references to this metal I give in Ross's own words:

"He (a native) was now interrogated respecting the iron with which his knife was edged, and informed us that it was found in the mountain before mentioned; that it was in several large masses, of which one in particular, which was harder than the rest, was a part of the mountain; that the others were in large pieces above ground, and not of so hard a nature; that they cut it off with a hard stone, and then beat it flat into pieces of the size of a sixpence, but of an oval shape. . . . the place where this metal was found, which is called Sowallick, was at least twenty-five miles distant" . . . (Ross's Narrative, p. 104).

Ross endeavored by the promise of large rewards to have the natives bring him specimens of this iron, but without success. He did, however, obtain a specimen of the stone which the natives used for the purpose of cutting off the iron from the rock. This stone appeared to be a basalt and was obtained from Inmallick, a headland to the northward (Ross's Narrative, p. 112). Of the metal Ross says:

"The most important mineral production of this country is the iron already described, which is found only at Sowallick or the Iron Mountains. The circumstances attending this have already been described; and it is now only necessary to add that it has been examined by Dr. Wollaston and found to contain nickel; and that it is probably of meteoric origin, since all the masses hitherto found in different places, which are equally attributed to this, are distinguished by that peculiarity" (Ross's Narrative, pp. 117–118).

The Arctic voyagers who succeeded Ross in this portion of the Arctic regions make no mention of this iron, and when, in 1875, the Arctic Committee of the Royal Society, acting by authority of the Lords Commissioners of the Admiralty, prepared for the use of the English Polar Expedition the Manual of the Natural History, Geology, and Physics of Greenland and the

neighboring regions, which contained presumably a complete summary of existing knowledge on those subjects to that date, we find in it on pp. 324–327 the following information in regard to this stone or stones:

(9.) The Iron mentioned above, under "Cape York," is stated by Capt. Ross to have been used by the "Arctic Highlanders" of Prince-Regent's Bay (lat. 75° 54′, long. 65° 53′), for the edges of their knives, and to have been obtained by them from the mountains near the coast, behind Bushnan Island. It was said by the natives, as interpreted by Sacheuse, to occur in several large masses or pieces, of which one in particular, harder than the rest, was part of the mountain. The iron was cut off with a hard stone, and then beaten into small, flat oval pieces. The place where the metal was found was called "Sowallick," and about 25 miles inland (lat. 76° 12′ N., long. 53° W.). This iron Dr. Wollaston estimated to contain between 3 and 4 *per cent.* of *nickel* and Mr. Fyfe found in it 2.56 *per cent.* Hence, they regarded it as of *meteoric origin. Op. cit.*, vol. i., p. 132, p. 140, and vol. ii., pp. 181–6.

XLI.—Notes on Meteoric Iron used by the Esquimaux of the Arctic Highlands. By Captain (now General Sir) Edward Sabine, R.A., F.R.S., &c., &c. 1819.

1. "Quarterly Journal of Literature, Science, etc.," 1819, vol. vi., p. 369, and "Geological Magazine," vol. ix., p. 74, 1872.

"The northern Esquimaux, lately visited by Captain Ross (in August, 1818), were observed to employ a variety of implements of iron; and upon inquiry being made concerning its source by Captain Sabine, he ascertained that it was procured from the mountains about 30 miles from the coast. The natives described the existence of two large masses containing it. The one was represented as being nearly pure iron, and they had been unable to do more than detach small fragments of it. The other, they say, was a stone, of which they could break fragments, which contain small globules of iron, and which they hammered out between two stones, and thus formed them into flat pieces about the size of half a sixpence, and which, let into a bone handle, side by side, form the edges of their knives. It immediately occurred to Captain Sabine that this might be meteoric iron; but the subject was not further attended to till specimens of the knives reached Sir Joseph Banks, by whose desire Mr. Brande examined the iron, and he found in it more than 3 per cent. of nickel. This, with uncommon appearance of the metal, which was perfectly free from rust, and had the peculiar silvery whiteness of meteoric iron, puts the source of the specimens alluded to out of all doubt. The one mass is probably entirely iron, and too hard and intractable for further management; the other appears to be a meteoric stone containing pieces of iron, which they had succeeded in removing and extending upon a stone anvil."

2. Extract from "An Account of the Esquimaux who inhabit the West Coast of Greenland above the Lat. 76." By Capt. Edward Sabine, R.A., F.R.S., F.L.S.

"Quarterly Journal of Literature, Science, etc.," vol. vii., 1819, pp. 72–94. *See also* the "Geological Magazine," vol. ix., 1872, pp. 73–74.

"Each of the Esquimaux who visited us on the 10th of August (1818), and I believe each of the others whom we after saw, had a rude instrument answering the purpose of a knife. The handle is of bone, from 10 to 12 inches long, shaped like the handle of a clasped knife; in a groove which is run along the edge are inserted several bits of flattened iron, in number from three to seven in different knives, and occupying generally half the length. No contrivance was applied to fasten any of these pieces to the handle, except the one at the point, which was generally two-edged and was rudely riveted. In answer to our inquiries from whence they obtained the iron, it was at first understood that they had found it on the shore; and it was supposed to be the hooping of casks, which might have been accidentally drifted on the land. We were surprised, however, in observing the facility with which they were induced to part with their knives; it is true, indeed, that they received far better instruments in exchange, but they did not appear to attach that value which we should have expected to iron so accidentally procured. This produced some discussion in the gun-room, when it appeared that some of the officers who had been present in the cabin when the Esquimaux were questioned were not satisfied that Zaccheus' ('Sacheuse,' of Captain Ross's Narrative, 1819) interpretation had been rightly understood; he was accordingly sent for afresh, and told that it was desired to know what had been said about the iron of the knives (one of which was on the table), and he was left to tell his story without interruption or help. He said it was not English or Danish, but Esquimaux iron; that it was got from two large stones on a hill near a part of the coast which we had lately passed, and which was now in sight; the stones were very hard; that small pieces were knocked off from them, and beaten flat between other stones. He repeated this account two or three times, so that no doubt remained of his meaning. In reply to other questions, we gathered from him that he had never heard of such stones in South Greenland; that the Esquimaux had said they knew of no others but these two; that the iron breaks off from the stone just in the state we saw it, and was beaten flat without being heated. Our subsequent visitors confirmed the above account, and added one curious circumstance—that the stones are not alike, one being altogether iron, and so hard and difficult to break that their supply is obtained entirely from the other, which is composed principally of a hard and dark rock; and by breaking it they get small pieces of iron out, which they beat as we see them. One of the men, being asked to describe the size of each of the stones, made a motion with his hands conveying the impression of a cube of two feet, and added that it would go through the skylight of the cabin, which was rather larger. The hill is in about 76° 10′ lat., and 64° ¾′ long.; it is called by the natives 'Sowilic,' derived from 'sowic,' the name for iron amongst these people, as well as amongst the South-Greenlander (*sic*). Zaccheus told me this word originally signified a hard black stone, of which the Esquimaux made knives before the Danes introduced iron amongst them; and that iron received the same name for being used

for the same purpose. I suppose that the Northern Esquimaux have applied it in a similar manner to the iron which they have thus accidentally found.

"We are informed in the account of Captain Cook's Third Voyage that the inhabitants of Norton Sound, which is in the immediate neighborhood of Behring's Straits, call the iron which they procure from Russians 'shawic,' which is evidently the same word. The peculiar colour of these pieces of iron, their softness and freedom from rust, strengthened the probability that they were of meteoric origin, which has since been proved by analysis."

When turning over in my mind the project for my 1891–92 Expedition to Whale Sound the discovery of this stone was naturally one of the minor attractions of this region, and during the winter at Redcliffe House I obtained from the natives considerable information in regard to the stone. I learned that it had been visited by many of the present generation of the natives, and made a bargain with one of the young men of the tribe to give him a gun if he would guide me to the stone when my party returned southward.

The lateness of the season, thick weather and the presence of much ice when the "Kite" steamed southward past Cape York rendered any delay inadvisable, so that the attempt to locate the stone was abandoned for the time.

Again in 1893–94 the discovery of this stone had its place in the schedule of the work which I hoped to accomplish, and when on the 1st of August, '93, my ship, the "Falcon," dropped anchor inside of Cape York, after the quickest passage on record through Melville Bay (24 hrs. 50 min.), and from the summit of Cape York itself I saw the coast to the eastward in the reputed locality of the stone apparently free of heavy ice, I hesitated some time before deciding that it was hardly advisable to risk any delay to, or interference

with, the main object of my expedition by taking the "Falcon" out of her course.

The mishaps to my inland-ice party and its enforced return to headquarters in the latter part of April, 1894, gave me, at last, the opportunity to make a special trip for the discovery of the meteor stone; and at 9 A.M. Wednesday, May 16, Lee and I left Anniversary Lodge in search of it, with the iron runner sledge and ten dogs.

Our travelling costumes consisted of a suit of underwear, with deerskin ahteahs, or hooded shirts, worn with the fur inside; fur trousers (my own of dogskin, Lee's of deerskin), with the fur worn outside; kamicks, or native sealskin boots, with woollen stockings and fur inner soles; and a pair, each, of woollen and fur mittens.

Upon the sledge was our sleeping gear, consisting of a deerskin kooletah, or hooded fur coat, and a pair of long fur stockings for each. The kooletahs were never worn during the trip, but used simply as a cushion or mattress on which to sleep.

In addition to these articles the sledge load comprised two weeks' rations and one week's reserve rations for contingencies, R.R. compass and tripod, Kodak camera, rifles and ammunition, snowshoes, and a pair of ski to be attached to the sledge in the event of our encountering very soft snow. Among the possibilities of the trip was a return over the inland-ice cap from C. York, or the Iron Mountain, to some point in Olrik's Bay, either as a matter of choice in the event of pleasant weather and a rapid down trip, or, as a matter of compulsion, in the event of breaking up of the sea ice between Cape York and Wolstenholm Sound before we were ready to return.

Behind the sledge trailed the new odometer constructed by Entrikin from barrel heads, playfully known by the boys as "the locomotive," and warranted to stand all shocks from the ice or a following sledge.

It was a glittering wintry day with fresh south wind and abundant cumuli casting cloud shadows on the white expanse of the bay and distant ice caps, the temperature 25 deg. F.

The snow on the bay ice was so deep and soft that but one of us could ride at a time, the other going ahead to encourage the team.

It was my desire to do more or less surveying work on this trip, so on leaving the Lodge our course was directed to my cairn on South Point. From the South Point we crossed the mouth of Bowdoin Bay to the Castle Cliffs, the eastern headlands of the Bay, passing on the way numerous seals basking in the sunshine on the ice.

At Castle Cliffs, on the ice foot under the lee of a great sandstone boulder, we found the tupics, or sealskin tents, of Panickpah and Koolootingwah. Panickpah was to be our driver from here on, and, while I climbed up the rocks for a round of angles from the cairn at this point, he brought out his kooletah and extra kamicks and lashed them on the sledge while Lee untangled the dogs.

From Castle Cliffs we drove as the crow flies straight across the gulf to Tigerachomy Point, the angle in the coast-line between the mouths of Olrik's and Academy Bays. Here another cairn was built and a round of angles taken, and this work completed, we kept on southwestward along the shore towards Olrik's Bay. The

greater portion of a freshly killed seal, left on the ice by some native who had just preceded us, gave my dogs a substantial repast. At half an hour before midnight we reached the now deserted village of Narksami. This village is situated in a westward-facing cove fronting Herbert Island and walled by steeply sloping mountains. The habitations numbered four: stone igloos built against a bank just above high-water, and just south of the boulder-strewn delta of the great kook (river) from the ice-cap. Here we stopped to mend the sledge and prepare supper, which was cooked on an open fire-place in front of the igloos with seal blubber for fuel. This repast of seal meat, brown bread, pea soup and tea finished, we started on, and at 4 A.M. arrived at the northern point of Olrik's Bay. Here, perched on sheltered shelves of the rocks, we found three tupics. In niches in the pudding-stone ledge were several fire-places, and on the ice-foot two seals and numerous pieces of blubber and walrus meat. We were travelling in the season of sunshine and plenty. The big clean tupic of Ootooniah was vacant, he and his wife being away visiting, and this offered such a good opportunity for undisturbed sleep after our nineteen hours' march, that we immediately availed ourselves of it and turned in.

Eight or nine hours of refreshing sleep put us in trim for the next day's work, and we pushed across the mouth of Olrik's Bay to Ittiblu, where we found four tupics occupied by about twice as many families.

Among the natives at this place were our friends Ootooniocksoah and Assayuh with their wives, also Ahwotah, the native with the wooden leg (mentioned

by Hall). Stopping but a short time at this place, we pushed on along the south shore toward Netchilumi. We had not proceeded more than three or four miles on our way when we were overtaken by two sledges. These turnouts were so entirely different from each other that they are worthy of notice. One was a family conveyance, a large sledge, upon which was piled the tupic, with all the hunting gear and household gods of the family, until the load was so high that it had been necessary to lash on a board to serve as an intermediate step by which to reach the top. Perched upon this sat Ootooniocksoah with his wife Ahkatah and his four or five-year old boy Teddylingwah. This load was drawn by seven small dogs, which were straining every muscle under the persuasive influence of Ootooniocksoah's twenty-foot rawhide lash that played on and about them with reports like a volley from a seven-shooter.

A striking contrast, the other sledge; Nupsah, out on a seal hunt, with three powerful, brawny dogs, and nothing on his sledge but his seal chair. The former turnout reminded me of those family picnic wagons, so many of which may be seen entering Fairmount Park on Sunday morning; the latter, of a bachelor, in his sulky, speeding a favorite pacer.

As the sledges kept along, side by side, Ahwotah, loquacious, as always, and anxious to be entertaining, pointed out to me an old igloo nearly buried beneath the falling fragments of a glacier, and said that it used to be occupied, but that the occupants had been driven away within her memory by the approach of the glacier. At another place a vein of soapstone, used

by the natives in the construction of their ikkimers or lamps, and kooloosoos or kettles, was pointed out. Five o'clock in the morning found us at Netchilumi after a twelve hours' march, in a fine clear, sunny night; though the snow banners were hung out all along the summits of the cliffs, and whenever we stopped, and the rattle of the sledges ceased, we could hear the ominous roaring of the wind aloft.

At Netchilumi we occupied the tupic of one-eyed Merktoshar and his kindly wife, Ahma. Their tupic offered the advantage of being pitched on the ice of the bay, away from the filth and offal which surrounded the tupics of the village; of being free of children and having a bed of clean fresh deerskins.

I found at this village a large number of natives assembled, filling to the utmost the seven tupics, besides that of Merktoshar and two igloos.

Some of these natives had been attracted here by the abundance of seals, while others were only on their way to Cape York.

There was more of an air of spring here than at the Lodge or any place that we had seen on our way.

The ground about the village and the slopes back of it were free of snow, except in detached banks, and during several hours of the day water could be obtained from streams trickling down these banks.

Hayes, in speaking of Barden Bay, in which this village of Netchilumi is located, distinctly refers to three glaciers, which, however, are not indicated on the charts. There seems to have been a very decided change in these glaciers since the time of his visit. The Tyndall Glacier, which he describes as presenting

a coast-line of ice over two miles long, is at present not over half that width. The small glacier to the right which at that time was "barely touching the water" is now pronouncedly in the water, while the third at the head of the Bay, which then "was yet miles away from the sea," has now pushed one corner nearly if not quite to high-water line.

Among the natives here was Tallekoteah, who at Redcliffe, two years ago, had acted as my mail-carrier, taking letters to Cape York to deliver to a whaler. He had fulfilled this mission faithfully, as my letters had reached their destination after my own return home, and Tallekoteah now delivered to me a brief note from Capt. Allen of the "Terra Nova," dated June 6, '92, acknowledging the receipt of my mail.

This man was thoroughly conversant with the region about Cape York, having lived there several seasons, and professed to be well acquainted with the location of the ironstones, which he said he had seen repeatedly. He told me that there were three, of varying sizes, the smallest about the size of a mikkie (dog) indicating a dog curled up, the second considerably larger, and the third still larger than the second.

He also said that one of them was neither very high above the water level nor very far from the water, while the other two were up on the side of the mountain. After a good deal of talk and considerable hesitation on his part, he agreed to go with us to Cape York and guide me to the stones.

He would take his own sledge and four dogs, and for the consideration of a knife I obtained from Ahngeeniah five more fine animals, so that I had sixteen dogs in

all, three of my original team having been given to Panickpah to enable him to get back home

These arrangements perfected, I turned in for a sleep, and when I awoke shortly before midnight I found the population of the village very materially decreased, five families having left with all their belongings for Cape York via Kangahsuk (Cape Parry).

At 1 A.M. of the nineteenth we left Netchilumi, Tallekoteah and myself on one sledge drawn by ten dogs, Lee following with the second sledge drawn by six. The midnight hours were gloomy and overcast, but this did not trouble us as long as fresh dogs and snow-free ice permitted us to dash at full gallop westward for Cape Parry, the black promontory which stands guard at the southern entrance of Whale Sound.

Three hours later we rounded the cape into the teeth of a driving snowstorm, whose fast falling flakes hid everything from our eyes but did not keep from our ears the sound of waves and the puffing of narwhal in the open water close to our right. A few miles south of Cape Parry, the violence of the storm had reached such a pitch that we could make no headway against it, and we sought the opportune shelter of an igloo, which Tallekoteah had excavated in a snow bank, during his upward trip from Cape York some weeks previous. This igloo was in a badly dilapidated condition, but was speedily repaired by Tallekoteah after he had constructed a wall of snowblocks to shelter him from the blinding drift. Then the dogs were secured to the ice foot, our sleeping gear and provisions were speedily passed in and freed from the damp snow, we followed and the entrance was closed

with neatly fitting snowblocks, and we were secure from the further violence of the storm.

Tallekoteah started a fire on the end of an empty tin box and melted water for our tea, filling the igloo with the stickiest of smoke and soot in the process.

In these contracted quarters we remained some twenty hours when a loose dog walking over the roof of our shelter brought the whole thing down upon us and drove us out into the storm, which had fortunately abated somewhat at this time. A glance at the ruins decided me to attempt to push on. We found the snow deep and heavy and underlaid with several inches of slush. Through this the dogs could scarcely drag the sledges alone, and riding was for us entirely out of the question.

Off Bell Rock, the summit of which looked down on us for a few moments through the mist and snow, Tallekoteah shot a seal, the less desirable portions of which furnished the dogs with an acceptable repast, while the choicer cuts were reserved for ourselves. Just below the entrance to Booth Sound we found five tupics pitched a little above the ice foot, the five families who left Netchilumi before us awaiting the cessation of the storm in order to continue their journey.

Almost with our arrival the work of striking these tupics was commenced, and we stopped only long enough to have Tawanah's wife, Nelleekah, cook our seal meat, off which we made a hearty meal and then pushed on again. It was still snowing, the travelling grew constantly heavier and heavier and the ice was intersected by cracks which, masked by the deep snow, allowed us to step into them without warning, and kept us wet constantly to the hips. We passed the site of

the winter hut of the boat-party from the "Advance" in 1854, and a little farther on a snow igloo and tupic, the occupants of which immediately gathered up their belongings and joined our caravan.

All this time my driver had been singing a little song of the deep, deep snow at Cape York, much deeper than here, which would cover the ironstones and make it impossible for us to find them; of the wide, wide Inaks (leads in the ice), much wider than any we had yet seen, which must be crossed before we reached Cape York, and into which we probably would fall and be drowned; of the almost certain breaking up of the ice before we returned, so that we could only come back in the ship, and also of the pain in his legs which would be sure to attack him if he was compelled to travel through deep snow. He was evidently very sick of his bargain, but I silenced him temporarily by telling him that I would at least visit the site of the stones now, and then, if necessary, find them from the ship later on.

At 3 P.M. we came up to open water, impinging directly against the shore, and, crossing the ice foot on a shaky bridge of floating ice cakes, we reached the snow-covered shore and followed it to the N. point of Wolstenholm Sound, the "land of Noogli" and the neighborhood of the Ignimut or firestone of the natives. Stopping here, my driver led me a long wild-goose chase across country to the face of a big glacier, and after various wanderings pointed to a huge snow-drift as the site of the stone. I told him he was an unmitigated fraud, and we returned to the sledge. Several other sledges had come up by this time and two or three tupics were already going up. My driver now told me that he in-

tended to return to Nitchilumi afoot, but that I could retain his sledge and dogs, and take one of the natives from here to go with me.

Lee began melting water for our tea over an open fire-place, while I made arrangements with Angodeblacho for us to sleep in his tupic and have him accompany me on the morrow as my guide and driver. Hardly had these arrangements been completed when Tallekoteah returned, saying he would keep on with me. His little game of bluff had failed completely. There were hundreds of male eiders in the water off the shore and numbers of little auks and burgomaster and kittiwake gulls flying over it. After several hours sleep in the crowded tupic of Angodeblacho, occupied by himself, another man, his wife, and two besides Lee and myself, I turned out and, with Angodeblacho as guide, made another attempt to find the ignimut. The same thick weather wrapt the dark mountains in a shroud, the same black water, canopied by sullen blue-black clouds, reached away from the shore.

Angodeblacho indicated nearly the same place as had Tallekoteah and dug away considerable snow but did not succeed in finding the stone. As well as I could judge, the ignimut or pyrites is not a detached boulder, but a nodule bedded in the face of a vertical rock escarpment. When we returned to the camp the tupics were all struck and the sledges packed. Leaving the point, we went along the shore a short distance, then descended into the slush-covered, crack-intersected ice of the Sound inside the open water. Some distance out several seals were seen and Kyutah with my rifle obtained one after crawling within twenty yards of it.

When we reached the three little islands which lie off the north shore of the Sound, we stopped to skin and cut up the seal. I selected the choice parts and some of the blubber for my share and we then hastened on leaving the Eskimo caravan, comprising some thirty-five individuals and fifty dogs, to dispose of the seal. Our course was directed through the fog across the Sound towards Saunders Island, which after a few hours was faintly visible ; then the sun broke through a rift in the clouds and the island with its regularly banded cliffs loomed up before us like a huge carnelian. Before we reached it a fresh south wind began to whirl the white drift over the surface of the bay and into our faces, and we sought shelter in a niche in the rocks forming its southeastern shore. Three sledges overtook us just as we arrived here and their occupants immediately began building a combination tupic igloo, erecting a low snow wall and throwing over this the folded tupics. While this was being done Lee and myself were enjoying a luxurious repast of seal steaks and tea cooked over a fire-place in a small cave in the rocks.

We obtained here six and a half hours' sleep and started for Cape Athol at 2 in the afternoon.

The travelling was fair, though the strong southeast wind still forced the drift into our faces. At 6 P.M. we came upon open water off Cape Athol, a broad lead reaching from the cape clear across to Saunders Island. After a single glance at this lead my driver whirled his team round and started at full speed for Nachsarsami to cross overland to the ice south of the open water. Following up the valley of the great "kook" at the mouth of which the village is situated, we climbed to

the snow-covered interior plateau some thousand feet above the sea level, then southward across this plateau about 6 miles to another valley, descending which, we came out on the sea ice again in a little cove about five miles north of Petowick Glacier. While crossing this plateau we saw seven deer, one of which was shot by Tallekoteah. The sea ice now was smooth and free of snow and we swept at good speed along the wild shore cliffs, past the rookeries of little auks, past the contorted sides of Mt. Agony to a cave close beside the Petowick Glacier, perhaps the very one in which Kane hauled up his boats. This cave is a regularly arched grotto in the solid gneissose rock, at or just above high-water mark. It is about 20 feet high and wide at the entrance and 20 feet deep, but only 5 feet high at the inner end. There is a still smaller extension of the cave back into the rocks which is used by the natives as a cache, the entrance being closed by loose stones.

Above the mouth of the cave the cliff rises vertically for hundreds of feet and on either side a projecting buttress shields the mouth of the cave completely from the wind. This cave is a well-known and favorite half-way house of the natives in their travels along this coast, and at its inner end we found a quantity of dried grass forming a bed, and a well blackened fireplace with remains of seals and birds.

After a "grand gorge," as Lee expressed it, of venison steaks, liver and bacon, seal meat, pea soup, tea and corn bread, we stretched ourselves on the rocks in this shelter and slept soundly. While we slept the sun shone in warmly, but by the time we had finished breakfast and were ready to start, our usual

companion, bad weather, was on hand to accompany us, and we left the cave in a driving snow squall. The blue-green wall of the great Petowick Glacier, projecting far out from the shore, compelled us to make a long detour seaward, and we soon encountered, in the shape of a broad lead or lane of water, a premonition of the obstacles that lay before us.

Some time was spent in discovering a practicable place for crossing and, once over, we found beyond many other leads, and a dreary expanse of deeply slush-covered and, in places, rotten ice. My driver proceeded with the greatest reluctance and at last confessed to his fear of the ice, which he said was very thin and at the least wind would be broken up and floated out into the north water, the ominous blue-black loom of which was close at hand, we now being several miles off the face of the glacier. As it was now, however, just as far to retreat as to advance, I flattered him a little, telling him he was too big and too brave a man to turn back, and insisted on proceeding, which we did.

The slush and leads continued, and the wet and heavy travelling, combined with the haunting fear that we might strike an impassable lead, rendered the hours extremely trying to me. At last we were able to head in towards the shore south of the glacier, and, ferrying across two broad leads on cakes of ice, we finally reached Cape Dudley Digges. In crossing the last lead the odometer caught in the ice and was twisted out of shape.

From the cape a broad outward-curving lead stretched clear across the unnamed bay, which I will call Parker Snow Bay, between the cape and Parker Snow Point,

and drove us nearly out to Conical Rock into an interminable network of leads caused by the strong tidal action between the rock and the shore.

At length we gained the shore ice a few miles south of Conical Rock and from here on we were troubled by no more leads. Deep snow, however, in front of each of the numerous glaciers, which pour their icy currents through every break in the Crimson Cliffs, retarded our progress, and at last, thoroughly tired and sleepy with the nervous tension of the day, I directed Tallekoteah, when about 15 miles from Cape York, to run the sledge ashore beside a big rock for a few hours' rest. We had been thirteen and a half hours on the march. Along the entire shore from Petowick to where we stopped the cliffs were alive with countless millions of little auks, and numerous loons, kittiwake gulls, burgomasters and Greenland falcons. One re-entrant angle in the cliffs was colonized on one side by loons and on the other by kittiwake gulls and little auks, the former occupying the lower floor. Perched on every available rock and ledge, like swarms of insects or clouds of dust on the snow, the number of atoms of life was inconceivable. Falling asleep here immediately, Lee and Tallekoteah behind the rock and myself on the sledge, the moments passed unheeded and unintentionally we wasted 8½ hours. Again under way, with fairly decent going except in front of the glaciers, we reached the Cape York tupics, 4 in number, at 3 in the morning. During the entire journey from the cave to Cape York we obtained only occasional glimpses of the summits of the cliffs through the fog and driving snow squalls. I had told Tallekoteah before reaching

Cape York that I wished to sleep in a tupic which was clean, and roomy, and not crowded with children, so I was immediately shown to the habitation of Tahweenyah, the oldest and most influential man of the village.

Here, after a supper of tea, bread and boiled seal meat, Lee and myself turned in for a comfortable sleep, while the wind whistled and the snow beat against our skin shelter on a low rock point of this wild Arctic promontory, facing southward across the icy, bear-haunted wastes of Melville Bay. At last we had reached "Imnaminomen" (Cape York) after ten days of struggle with the difficulties of Arctic spring travelling, but even now the outlook was not encouraging for a termination of our troubles, and there was every probability that we might be storm-bound here for several days.

Fifteen hours later, the storm had abated sufficiently for us to leave the tupic and we went around an angle of the shore to the "pooto" (hole), where a natural bridge connects an outlying buttress with the main cliffs. Just over the arch of this natural bridge is a falcon's nest, and a few feet above it a raven's, while in the sheltered angle of the buttress we found another tupic and in full blast several fire-places, over which the inhabitants of the settlement were doing their cooking. Several seals lay on the ice foot, trophies of the hunt, and every niche in the rocks out of reach of the dogs had its store of little auks, which the natives were catching in large numbers and on which they were now feasting to repletion.

Long lines of the skins of these birds were stretched drying from rock to rock, later on to be made up into

the universal ahteah or birdskin shirt worn by every native. At every tupic were pieces of bearskin, several of these animals having been killed here this spring.

In the shelter of the "pooto" Lee went to work to cook our supply of meat for the trip to the Iron Mountain, while I set Tallekoteah to lashing the skin on the bottoms of his sledge runners in preparation for the deep snow which the natives said was everywhere to the eastward of the Cape. While this work was in progress the force of the storm increased again so as to put the idea of further progress at present entirely out of the question; so, after another of Lee's "grand gorges," we returned to Tahweenyah's tupic to await as patiently as possible the cessation of the storm. It seemed as if the fates were against me in everything, with only one pleasant day since leaving the Lodge and the hardest of travelling the entire way. This was, however, the expiring effort of the storm; a few hours later it began clearing, and having left in charge of Tahweenyah everything that we would not absolutely need for a three days' trip, and, with all sixteen of our dogs attached to Tallekoteah's sledge, we entered upon the last stage of our journey.

Skirting along the shore, we passed round the south-east point of Cape York, with its numerous deserted igloos, to the village beside the glacier where the "Falcon" stopped last Summer. Here we found one family, which either from inherent laziness or lack of a tupic, were still occupying their damp and dilapidated igloo. From this point our course lay straight across the bay to the islands on the eastern side, where there were said to be four igloos, and where we thought

to find my old acquaintance "little" Kessuh, the same youth that I had expected would be my guide two years ago. The snow was very deep, and Lee and myself were compelled to take turns in snowshoeing ahead of the dogs. This gave us little concern, however, as the sun was now shining brightly and there was every prospect of a brilliantly clear night before us. The entire circuit of this bay, which is certainly large enough to deserve a name on the charts, from the Eskimo village which we had just left round to the islands ahead of us, is a glacier face broken by a few nunataks. Arrived at the island igloos, we found them deserted, but a fresh sledge track led from them round the end of the island, and following this we soon came to a cave in the rocks, and in the cave was our little friend, fast asleep upon a luxurious bed of bearskins, with a deer skin thrown over him.

The habitation of this young bachelor was so unique that it merits some description. Just outside the cave was his sledge, just within the entrance his dogs were fastened, then came his bed with his gun leaning against the rocks at his head. A niche in the rocks, some four feet above the floor, formed his fire-place, and in the inner extension of the cave, behind his head, were the carcasses of four or five seals, more bear skins, some bear meat, several birds, his harpoon, lines and other belongings. As he said to me, he had no "koona" (wife) to make him a tupic, so he was obliged to find a ready-made one. He jumped at the opportunity of accompanying us, and in a few moments was dressed and had his dogs fastened to his sledge. Six of my dogs were added to his four. Lee got on the

sledge with him, and with this arrangement of loads, fresh dogs and hard snow, we left the cave at a gallop, which speed was kept up past the outer island and eastward along the shore till after midnight, when we reached the western point of the double-armed bay, running into the land north of Bushnan Island. There is another island not shown on the charts, lying across the mouth of this bay inside of Bushnan, and passing inside of this, we headed for the eastern arm of the bay.

By this time, under the influence of the clear, cold night, the snow had become firm enough, so that we were able to discard the ski from the runners, and this, with the numerous seals on the ice, kept the dogs in a constant state of excitement and at their utmost speed. Kessuh succeeded in shooting one seal, which gave the dogs a good feed and provided for our dinner.

At 4.15 in the morning we had reached the head of the bay, the dogs were fast to the ice foot, and Tallekoteah and myself were climbing over it in search of the ironstone.

After passing some five hundred yards up a narrow valley, Tallekoteah began looking about until a bit of blue trap rock, projecting above the snow, caught his eye. Kicking aside the snow he exposed more pieces, saying this was a pile of the stones used in pounding fragments from the ironstone. He then indicated a spot four or five feet distant as the location of the long-sought stone. Returning to the sledge for the saw-knife, he began excavating the snow and at last, after digging a pit some three feet deep and five feet in diameter, just at 5.30 Sunday morning, May 27th,

the great brown heaven-born stone, rudely awakened from its winter's sleep, found for the first time in its cycles of existence the eyes of a white man gazing upon it.

I kept Tallekoteah at work enlarging the pit and excavating about the stone until Lee and Kessuh arrived, when he was relieved by the latter. In addition to the thick blanket of snow, the stone was completely covered with a half-inch thick coating of ice. The work of excavation satisfactorily completed, I spent the remainder of the perfect, cloudless day of Sunday until 4 o'clock in the afternoon, in measuring, sketching and photographing the stone and taking angles for a rough map of the vicinity, and then descended to the sledge for a little needed sleep.

Approach to, Site of, and Description of, the Ironstone.

Some twenty-five miles s. e. ¾ s. (mag.) from Cape York is a bold auk-inhabited headland, to the eastward of which a double-armed bay stretches northeastward to the icy background of this snow-clad coast. Two islands, one large and one small, guard the mouth of this bay. The left or westerly arm of this bay is comparatively broad and terminates in a long glacier face, the western wall of this arm running far into the ice cap from the glacier face, and ending in a wild, black cliff. The entire western shore is apparently a continuous sheet of glaciated snow. The easterly arm is not so deep, is separated from the other by the bold black auk-haunted bluff of Akpudi, and ends three miles be-

yond this point in a little rectangular cove, walled by a series of hills 300 to 500 feet high. This wall is continuous everywhere, except at the eastern angle of the cove, where a gently-sloping narrow valley opens. Proceeding up this for a few hundred yards, one finds that it is an isthmus, separating the bay already mentioned from a glacier bay to the eastward. The isthmus is perhaps eighty feet high at its highest point, and just east of this on the southern slope of the mountain to the north, lies the famous ironstone, one hundred and thirteen feet above sea level, and 450 yards from the shore line of the bay.

Partly bedded in the ground, the big brown mass slopes southward, with the slope of the hill on which it rests. Standing beside it the eye roams southward over the broken ice masses of Glacier Bay to the distant haunts of the Polar bear; eastward across the glacier itself, to the ebon faces of the Black Twins, two great ice-capped cliffs which frown down upon the glacier; and southwestward over the placid surface of Saviksoah Bay, which offers such a striking contrast to the berg chaos on the opposite side of the isthmus. Seen from above, the stone is of an irregular rounded trapezoidal shape, with a circumference of eleven feet, a maximum length of four feet and three inches, and a maximum width of three feet and three inches. The highest part of the stone above ground is fifteen inches. Its average thickness is perhaps one to one and a half feet, but difficult to determine at this season. The weight is probably not less than 5,500 lbs., and perhaps double that, depending upon the penetration of the stone into the earth. Its surface is dark-brown rust

color, interspersed with small greenish pits. The stone is apparently a mass of pure iron, with no admixture of grit or any other foreign substance. It can be easily cut with a knife, and wherever scraped with knife or file presents a bright silvery lustre. It is surrounded and partly covered by numerous fragments of fine-grained blue trap, portions of wave-worn boulders and cobbles, brought here by the natives on their sledges from along the shore at and south of Cape Athol, for the purpose of detaching scales of the metal. All the other rock of the vicinity is gneissose.

Tallekoteah tells me that the Innuits call the stone a woman in a sitting position, and says it used to be much larger and higher than it is now, but that his people have gradually worn it down, and that years ago natives from Peterahwick broke off the head and carried it away. He also voluntarily told how the ancient knives of his people used to be made, namely, by inserting several flattened pieces in a bone or ivory back; and then with a piece of trap lying near showed me how the flakes of iron were detached. Nothing could be more interesting than this re-enacting of this ancient practice.

I scratched a rough "P" on the surface of the metal as an indisputable proof of my having found the stone, in case I should not be able, later on, to reach it with my ship, and built a small cairn upon the top of a big gneissose boulder 112 yards distant, in which I placed the following brief record:

SUNDAY, May 27, 1894.

"This record is deposited to show that on the above date R. E. Peary, U. S. Navy, and Hugh J. Lee, of the

North Greenland Expedition of 1893–94, with Tallekoteah, an Eskimo guide, discovered the famous Iron Stone, first mentioned by Capt. Ross, and have carefully examined the same."

"(Signed) R. E. Peary, U. S. N.,
Comd'g Expedition."

Then after a last look at the celestial straggler, I descended to the sledge where Lee had already preceded me, and, stretching myself upon it, immediately fell asleep. Two hours later I awoke to find the entire sky overcast and a chill wind blowing up the bay. The weather demon had given us just one perfect day in which to learn the secret of the meteor stone, and was now resuming his baleful sway.

Supper, breakfast or dinner, just as one chooses to call it, over, the dogs were hitched up and we started to locate the second meteor stone, which my guide told me was on the large island at the entrance of the bay. Passing at a good pace down the bay, we soon reached the approximate site of this second ironstone, some seven miles distant on the eastern end of the island.

Two hours or more were spent in the search for the stone, a search that was rendered fruitless by the great depth of snow that had been drifted in here by the southeasterly winds, completely obliterating all the minor topography of the island.

The stone was described to me as being firmly imbedded in the ground, which is here entirely free from other stones, and the portion projecting above ground is represented as from five to eight feet long, two to four feet wide, and one and a half to three feet high.

My guides also persisted in the statement that it was precisely like the other, and that the natives had not used this one for making knives because the other was more convenient. Before leaving the island, Talleko-teah pointed out to me a headland to the eastward, somewhere in the rear of which he said was the third ironstone. He, however, had not seen this stone, nor could he name any native that had. Its existence was, however, a matter of general knowledge among the natives.

At midnight we started on our return to Cape York. The eastern horizon was by this time black with a rapidly advancing snow storm, which overtook us about 2 A.M. This snow storm was remarkable for its great variety of crystals, hardly two of which seemed alike, and I noticed two forms that I do not remember to have seen figured or described.

At 4 A.M. we were back at Kessuh's cave again, and after a hearty meal we left the fearless young bachelor curled up once more on his bear-skin couch and started across the Bay for Cape York.

The now heavily-falling snow clogged the sledge more and more, and it was 12.30 P.M. of Monday when we once more reached the friendly tupic of Tah-ween-yah, myself hungry for sleep, of which I had had two hours in the last fifty.

Thirty-six hours later, at midnight of Tuesday, the storm had cleared away, cærulean blue sky hung over the black cape, beyond the shadow of which the ice-bergs gleamed yellow in the brilliant sunlight, and we were heading northward through the deep snow, our faces turned homeward. Our host, Tah-ween-yah, and

our friend, Koko, accompanied us with their sledges and dogs, bound up the coast after guillemots. Riding was not to be thought of, as the dogs could barely haul the sledges alone, so we had strapped on our snowshoes for a long and heavy day's work. Every indication pointed to a long and weary struggle homeward, yet I had the sustaining thought that I had, in spite of all obstacles and drawbacks, accomplished the object of my trip. At the end of fourteen and one-half hours of perfect weather and hip-wrenching toil through the snow we halted at the base of Karkarsoak, twenty miles from the tupics, and hauled our sledges up over the ice foot to the shelter of a big rock. Dinner finished, I was in a few minutes asleep on my sledge and Lee on his.

A few hours later I awoke to find it blowing a gale, the air full of snow, and the three Eskimos just commencing to excavate a shelter in the big drift round the corner of the rock. I curled myself up with back to the wind for another nap, while this work was progressing. When Tallekoteah woke me to tell me the igloo was finished I was covered with snow. My Eskimos had made a first-class job of their house building, having excavated a comfortable three-room igloo in the face of the big drift. The outside door (?) led to the central compartment, which Tallekoteah informed me was for himself and Tah-ween-yah ; the compartment to the left of this, and connected with it by an arched opening, was for Lee and myself, while the one on the right, similarly connected, was for Koko, who had pushed his sledge into it, intending to use it for a bed. Everything having been brought inside by

my faithful companions, and the dogs carefully secured, the entrance was closed up with blocks of snow, except a little hole at the top, and, spreading our kooletahs and a dogskin on the floor of our compartment, Lee and myself resumed our interrupted slumbers. All Wednesday night, Thursday, Thursday night and into Friday morning the storm howled and roared along the wild cliffs and among the bergs, though no faintest murmur reached us in our deeply buried cavern. As the drift increased over us, the little opening to the outer world was kept clear with a walrus lance, and when this became too short, with two lashed together. At length, late Friday forenoon, Koko set to work, with saw-knife and feet, to dig out, and when his tunnel to the outer air was complete, its length at the bottom was not far from eighteen feet. The wind and snow had nearly ceased, and in a short time the clouds began to clear away, and our eyes were gladdened by the sight of Conical Rock, fifteen miles distant. After attending to the dogs, the two natives climbed up the slope a hundred feet or so above the igloo with their nets, and within half an hour had captured between one and two hundred little auks, which they brought down to the igloo and skinned and cleaned with the greatest rapidity and dexterity. The plump, firm breasts of these birds furnished us the material for a very enjoyable meal, and the refuse gave our dogs a good feed. When we again got under way I was glad to find that the strong wind had improved the travelling so that we could ride, until we reached the Heilprin, or Cavern Glacier. Here, for a mile or two, we were compelled to wade through deep slush

in front of the glacier. At midnight we reached the loon-frequented cliffs, some three or four miles north of the glacier, and stopped about an hour to obtain a few birds. Here we parted company with our two travelling companions, who were to stay here for a day or two.

Two or three miles farther north we turned into a little break in the cliffs, just south of Conical Rock, and began an arduous overland climb to avoid the *inaks* or leads. A narrow winding cañon, its bottom filled with deep soft snow, led steeply up from the head of this height, till at a distance of a mile and a half from the shore it was closed by a nearly vertical curtain-like drift, the crest of which rose 1,050 feet above sea level. After climbing at a snail's pace and with frequent stops to the foot of this drift, it became necessary to carry the greater portion of the sledge loads on our backs, over the crest, and then to push and pull the sledges up the slope, step by step, after the struggling and half-buried dogs. Once over the crest of the drift, the ascent, though steep, was easier, and a rise of 700 feet more in a distance of, perhaps, two miles, brought us to the summit from which we could look directly down upon the glacier, which descends to Parker Snow Bay and over the entire country to the northward as far as Wolstenholm and Saunders Islands.

The morning was perfectly calm and clear, and I went a short distance to the left of our course to a somewhat higher spot, to obtain some photographs.

The little Parker Snow Bay lay spread out below me, its shape and extension into the land fully shown; beyond it, over a stretch of gently rolling nearly snow-

free country, the river-like Petowick Glacier swept straight as an arrow and with full banks from the distant ice cap to the sea. Beyond this again, more rolling country with deep snowdrifts in the valleys extended to distant Nachsarsami and the southern shore of Wolstenholm Sound.

Off Wolstenholm Island, the blue-black ribbon of the north water was plainly discernible. Our course now lay down the surface of the glacier, and our descent was a very different matter from our ascent. Seating myself on the sledge behind Tallekoteah, in a moment we were whirling down the steep slope of the glacier, and half an hour later were bouncing over the ice foot of the bay, five or six miles distant.

It was now 7.30 A. M., the meridian of the Arctic morning, and the surface of the bay was one blinding glare of light, in which several seals were basking, and through which came to our ears the hum of the billions of seabirds on the opposite cliffs.

The *inaks* or leads, which with the glass I had seen at the mouth of the bay from the highest point on our overland trip, had decided my driver to strike overland again from the head of the bay, so we laid our course for its northeastern angle, where there are two igloos. Some distance short of the shore, however, we came upon the fresh tracks of two sledges going towards the entrance of the bay, and the sight of these made my driver change his mind at once, and in a moment we were whirling along nearly at right angles to our former course. When the bird cliffs were reached, we found still more sledge tracks and still fresher signs of natives, so that every moment I expected to see the tupic of

some of the families, who had started south with us, pitched at the foot of the cliffs. In this, however, I was disappointed, only a cave which had been used as a camping place being found. The *inaks* near the mouth of the bay we were able to cross after a little reconnoitring, and at 10.30 the last one was conquered, and we rounded Cape Dudley Digges.

At 11 A. M., we camped on the southern side of the little bight, which makes in along the side of the Petowick Glacier. I use the word "camped" to express the simple operation of fastening the dogs to the ice foot and building a fire on the rocks, the day being so warm that we could sleep without shelter.

Directly opposite was the blue wall of the glacier, which we must cross, and which was the last obstacle between us and decent going.

After a good dinner of boiled loons, bread and tea we turned in, and at 9.20 P.M. of Saturday, after some five or six hours of sleep, we resumed our march for the head of the bight, which was reached in half an hour, crossing a bear track on the way.

From the head of the bight we climbed up a snow-filled ravine which, trending at first eastward, gradually swung to the north and at an elevation of 750 feet gave us a fine view of the glacier. A rapid descent brought us down to the glacier edge, which was reached at 10.45 P.M.

The place where we ascended the side of the glacier was five or six miles above its face and our course lay diagonally down and across it to the point where its northern edge breaks through the shore cliffs. For about a mile the surface of the glacier consisted of low

rounded séracs and shallow depressions, then gradually became smooth and unbroken like the inland ice throughout the remainder of its width.

As we galloped rapidly over this firm, slightly descending surface, I was strongly impressed with the advantages this glacier offers for the study of glacial characteristics in this latitude.

These advantages are, its length of twelve to twenty-five miles, its width of six to seven miles rectilineal course, nearly uniform slope, down what was once a deep fjord, and its unobstructed debouchment into the open sea, all of which tend to eliminate temporary minor and local causes, affecting the motion and physique of the ice stream and to render data obtained from it typical for this latitude.

Added to these advantages are the accessibility of the glacier, the smoothness of its surface and the feasibility of establishing camp directly upon it.

While crossing the glacier, ominous white wind clouds were rapidly whirling up from the southeast over the ice cap, and as we reached its northern edge the vanguard of the gale overtook us. Descending the northern side of the glacier at a place which no one but an Eskimo would attempt, where Lee with his sledge and team went down, rolling over and over before landing in a confused heap, we reached the little sheltered cove beside the glacier, and emerging from this we were at the cave where we had slept on our downward trip.

To my agreeable surprise we found the ice here perfectly smooth, high winds having swept it entirely free of snow, and this, with the strong wind which was

now rapidly increasing behind, enabled us to keep up a good speed, the sledge at times even running upon the heels of the dogs. A few miles beyond the cave we came upon the solitary tupic of Tautcha, pitched at the mouth of a narrow gorge. From him we learned that Kyo and another Eskimo were located in their tupics a few miles further up the shore. These tupics we reached a little before 3 A.M., the wind blowing a gale, the clouds and fog rapidly drifting in from the southward; here I obtained a number of little auks from the natives and then began our next overland journey, the trail leading up a narrow ravine.

There was no doubt but that the weather aloft was as bad as could be desired, but Tallekoteah claimed to know every step of the way thoroughly and I had confidence in what he said.

The mouth of the ravine is just south of the Red Mountain of my sketches, and a few miles south of the ravine from which we emerged on our downward trip. A few miles from the shore it opens up on the interior plateau. At five in the morning, having reached an elevation of 1,050 feet, we began to descend, and, going at a rapid pace portions of the way, with the dogs dragging behind the sledge, we reached Nachsarsami at 7 P. M.

During this entire overland march we had been enveloped in the clouds and lashed by a southeast gale. When we arrived at Nachsarsami the clouds had descended to the sea level, enveloping everything in their dense folds. Three tupics stood in line near the shore, which I soon found to belong to Ootooniacksoah, Annowkah, and Angodeblacho. I chose the latter

in which to sleep, the owner being out after a recently killed walrus.

Late in the afternoon the wind decreased and the clouds gradually lifted, and we began what proved to be the longest and most wearying march of the trip. As we started, the base of Saunders Island was visible. From Nachsarsami to the peculiar eastern point of Saunders Island the travelling was heavy, the sledge breaking through the top crust into the slush beneath; from here to the north shore of the Sound the travelling improved, partly because of the advancing night and partly on account of the fresh northeast wind, both tending to harden the snow.

As we passed along under the wonderfully regularly banded cliffs of Saunders Island, I could not help being again struck by their appearance, reminding me very forcibly of the towering numerous-storied freestone hotels or apartment houses of some of our great cities.

When well out into the Sound the sun broke through the clouds, but the wind increased rather than the reverse, a glittering silver ribbon gradually crept along the profile of the ice cap between Granville Bay and Whale Sound, and an ominous snow banner was unfurled from the summit of the black rock Poo-een-yah, ahead of us. All this, as I knew by previous experience, meant furious drift aloft, and led me to give up the intention which I had of making the overland cut between Granville and Olrik's bays. The open water had eaten its way much farther into the bay since our downward trip and compelled us to pass inside of the E-ly small island. Six o'clock in the morning found us

at the land of Noogli just in front of the Ignimut Glacier. Here I made another fortunately successful attempt to find the "Ignimut" and obtained several specimens.

It is a pyrites cropping out in several veins on the face of a limestone escarpment, some twenty-five to thirty feet high (deep drift at base prevents accurate estimate), and seems to be confined to a space of about ten feet in length of the escarpment.

My specimens obtained, we pushed ahead over the low strip of foreshore which lies at the foot of the cliffs from the north side of Wolstenholm Sound to Cape Parry; past the great rock Poo-een-yah, from the foot of which we looked down upon the turquoise-blue north water dotted with gleaming bergs and far-off Carey Island; past the north arm of the Ignimut Glacier; past the site of the house of the boat party from the "Advance," now deeply buried in snow, and so on up to Booth Sound and the wonderful Bell Rock, which we reached at 8.45 A. M. All this time, though the sun was shining brightly, the wind blew in furious squalls, whirling the snow in our faces in blinding sheets. Lee being some distance behind me, we waited here under the rock for him to come up.

Bell Rock is a very symmetrical formation when seen either from the southeastern or seaward sides, but less so when seen from the east. The base consists of loose clay shale, dipping slightly to the west. The shale is about 30 feet out of the water at the eastern end and presents a vertical wall to the water; from this base the Rock itself rises to a height of 900 to 1,000 feet. The shape of the rock with the talus at its base very closely resem-

bles that of a bell. The talus extends somewhat more than half way to the summit, and up to the top of the talus it is horizontally stratified. This stratification is not noticeable except on the northern side, where the disintegration of the rock has been less rapid and the talus is less extensive. Above the talus the rock is a mass of homogeneous granite, apparently with perpendicular sides, the top possibly accessible at one place, a cleft on the eastern side. There is an extensive layer of fossil clam shells in the eastern end of the base, some 30 feet above high water, and covered with about a foot of earth, etc. Along the side of the Island the water was trickling down the banks.

Leaving the rock, the wind seemed to increase in violence, coming directly down off the glacier which fills the north arm of Booth Sound, and it was with difficulty that the dogs could be driven against it.

Open water at Cape Parry necessitated our going overland to Netchilumi from Booth Sound, and our course lay over this glacier right in the teeth of the gale. The lee of the glacier face offered a grateful temporary shelter, and then we commenced the ascent of the lateral gorge along the south side of the glacier.

Confined in this gorge, the wind repeatedly nearly swept us from our feet. At one steep descent the sledge had to be lowered stern foremost, and when at last we scaled the glacier side to its surface, it was in much the same way that flies crawl up a wall. The surface of this glacier rises with a gradual slope straight away to the ice-cap domes overlooking Barden Bay, 3,362 feet above sea level.

It was four in the afternoon when we reached the

summit of one of these domes, and looked down into the bay at our feet and out over the outer expanse of Whale Sound and its triple islands. The climb from Booth Sound to this point, some 10–15 miles, was one of the most fatiguing that I have made in Greenland. The comparatively steep and unvarying ascent, the character of the snow, yielding at every step, the furious and incessant wind and drift right in our faces, and the long time that we had been on the march, combined to make the climb a serious one. The direct descent from where we stood to the lower portion of the Tyndall Glacier was a nearly vertical ice slope, surcharged upon a vertical cliff, and we were forced to make a detour southward to the more practicable slopes at the glacier head. After travelling some few miles in this direction we seated ourselves upon the sledges for one of the grandest and most exhilarating of toboggan slides.

The start was from a grand ice dome, more than 3,000 feet above the sea, the toboggan slide on the serpentine icy slope of the great Tyndall Glacier. The toboggan, one of the clippers of the new fleet of sledges built since the advent of the Peary expeditions, was a sledge 8 feet long, 20 inches wide, 7 inches high, shod with tusks of the walrus, and fastened with the thongs of the seal and walrus; the toboggan steerer, fur-clad Tallekoteah, with his matted black hair flying back from his face.

Seated, both of us, astride the sledge, with heels pressed into the snow, almost in an instant after we started the dogs were trailing in a confused mass behind the sledge, the ablest ones at full gallop, to

keep up with the sledge, the others dragged by their traces, whirling and tumbling over and over in a cloud of flying snow.

Fans of blinding snow flew backward from our vibrating feet, and so mile after mile we dashed down our cyclopean toboggan shute, the great red brown rock buttresses enclosing it, rich and warm with the glowing sunlight, whirling past us with dizzying rapidity.

The bay ice below rose rapidly to meet us, two or three bergs imprisoned in it grew, as grows the locomotive of the lightning express when thundering straight at one at a speed of 60 miles per hour, the islands sank to the horizon, the ice domes in our rear disappeared behind the slope of the glacier, and at last, veering sharply to the left into the snow-filled gorge beside the glacier, to avoid the crevasses in its lower portion, we reached the level of the bay, breathless, with clothing snow-filled, and our dogs animated snowballs. Half an hour later we were at Netchilumi, the centre of an admiring group of natives, and my dusky driver was restored again to the arms of his anxious Ah-wah-ting-nah.

I repaired at once to the roomy and cleanly tupic of one-eyed Mocktoshah and his faithful old wife, Ahmah, still located on the ice by itself. Here, stretched upon the bed of clean fresh deer skins, the floor of the tupic in front of the bed, the translucent blue bay ice, I gave myself up to the luxury of a chill, induced by my diet of walrus meat and the over-exertion of the day. My eyes, too, were in a bad way from the blinding sun and beating drift.

At 1.40 P.M. the next day we got under way for the Lodge, Tallekoteah, with his wife and daughter, and all his and his son's dogs, going with me on his big sledge, while Ooblooah, his son, drove Lee's team of six, the two dogs that got loose on the ice cap having come in during the night. Kyutah and family also accompanied us.

What with my smarting eyes and disordered stomach, I took but little interest in the first part of the trip, being only too glad that I was able to ride all the time.

All the afternoon we crept along the shore to Ittiblu, then across Olrik's Bay past Nocksahmy to Tigarach-ahmy, which we reached at 4 A.M., Wednesday, June 6. 9 A.M. found us at the Castle Cliffs, and at 2 P.M. we reached the Lodge.

A LETTER FROM DR. KURTZ.

The following letter, received in the early summer, after the death of Dr. Morong, is printed at Dr. Kurtz's request:

CÓRDOBA, June 1, 1894.

DEAR SIR:

The day before yesterday I received some copies of the number of your Bulletin containing my "Observations." and Mr. Morong's Reply. First of all, I want to express to you and to your Society my very best thanks for sending me those copies; furthermore, I should like to make some remarks upon Mr. Morong's Reply. To do this in the shortest way possible, it will be necessary to put down correctly the question "en question."

I never doubted the definition of the Pampa as given by Mr. Morong and by others before him (and by myself in the "Observations"), as a treeless, hill-less and rockless plain, but what I contested, and wanted to correct as a grave error, is the opinion to be gathered from Mr. Morong's passages that this treeless, hill-less and rockless plain stretches forth from the Atlantic to the very foot of the Cordillera.

It is not quite clear from his reply, if Mr. Morong understood quite well this my intention; from his observations it seems not to be the case. Upon the point, if he believes still, that the Pampa covers all the ground between the Atlantic and the Andes, or not, he does not express himself directly, nor does he enter upon my statements of the existence of Sierras in the Provinces of Buenos-Aires and San Luis. One can only gather his meaning from his quotations, f. i., those of Mr. Beaumont's description of the plain between Atlantic and Cordillera and the definition of the Pampa given in Johnson's Dictionary. Mr. Morong cites further Dr. P. G. Lorentz's description of the various formations in the Interior, but he does not mention that Lorentz confines the Pampa to the right border of the Paraná, this forming its eastern limit, and stretching southward to Bahia Blanca. The western frontier of the Pampa Lorentz fixed as situated between Rosario de Santa Fé and Córdoba, where it is "tocando con la Formacion del Monte." The differences pointed out by Lorentz and by myself between Pampa and Monte seem not to exist for, or at least are not acknowledged by, Mr. Morong. It seems to me that he calls Pampa "the whole territory between the Atlantic and the Andes." Of the authorities he cites Woodbine Parish and C. Darwin (who made his trip from Bahia Blanca to Buenos-Aires in 1833, not 1845), have been only in the provinces of the littoral (*i. e.*, Santa-Fé, Buenos-Aires), but have never visited the interior, the "formacion del Monte." The statement of Mr. J.

A. D. Beaumont (p. 44 of the Bulletin, "From the Atlantic Ocean in the east . . . . . which nowhere rise to the level of mountains") is astonishing, or Mr. Beaumont has a very fastidious opinion of mountains. The Sierra Tandil in the south of Buenos-Aires arises to 1,065 m., the Sierras south of San Luis—in the Cerro Linces—to 1,021 m., the Cerro Varela to about 800 m., the Cerro del Gigante (northwest of San Luis) to 1,060 m. Neither Mr. Beaumont nor Mr. Morong can possibly class these elevations as "gentle undulations." Somewhat more to the South—looking over J. von Siemiradzki's map in Petermann's Mitteilungen, 39, 1893, III. Tafel 5—you find indicated in the Pampa central various little Sierras, rising in the Sierra Choique Mahuida to 500 m., and moreover, there are "Mimosenwälder," of which in the accompanying text is said, that there are trees of *Prosopis* of 10 m. in height, and with trunks of half a metre in diameter.

As to the botanical details I have to confess, that *Phytolacca* "*decandra*" L. (instead of *P.* "*dioica*" L.), *Iodina rhombifolia*, "Miers" (instead of "Hook. et Arn."), and *Larrea* "*cuneata*" Cav. (instead of "*cuneifolia*" Cav.) are very serious *lapsus calami*, due to the circumstance that I wrote my second letter to you hastily, and without looking for names or authorities of the plants.

Mr. Morong remarks, *Bulnesia Retamo* Griseb. should be *Zygophyllum Retamo* Gill in Hook., Bot Misc., and that there is only one species of *Bulnesia*, according to Bentham et Hooker, Genera plantarum. The first volume of the Genera plantarum was completed in 1867; in his "Plantæ Lorentzianæ" (1894), Grisebach removed the *Zygophyllum Retamo* on account of its fruit-characters to *Bulnesia*, and described some new species of this genus, to which he added in his "Symbolæ ad Floram Argentinam" (1879) another one, so that we know now five species of *Bulnesia*, enumerated too in Hieronymus, Plantæ diaph.

Schinus dependens, Ortega, Decad. VIII., p. 102, is the oldest name for the plant in question, then changed by Kunth into *Duvaua dependens;* then Engles, uniting again *Duvaua* with *Schinus* (Alph. et C. De Candolle, Suites au Prodromus IV., 1883, pp. 339–340), gives to the plant its oldest name.

I did not doubt the gigantic thistles in any way; I cited them only to indicate the end of my quotation.

Begging of your kindness to show this letter to Mr. Morong, and then to publish it at your convenience, I remain, dear sir, very truly yours,

DR. F. KURTZ.

THE AMERICAN ASSOCIATION.

The forty-third annual meeting of the American Association for the Advancement of Science was held this year in Brooklyn. At this meeting an important step was taken towards organizing a new section in the Association, namely, "Section J—Geography." Heretofore, all papers pertaining to geography have been included in Section E, which is specially devoted to Geology. In accordance with the Constitution, a new section cannot be formed unless proposed at one meeting and voted upon at the next annual meeting. The following proposed amendments were offered to the Council by Mr. Gardiner G. Hubbard: "To change Article 22 by omitting in the name of Section E the term 'Geography' and by inserting in the list of sections a new section entitled 'J—Geography.'" This proposed amendment will be acted upon at the meeting of 1895, and the successful organization of "Section J" will doubtless depend largely upon the number and importance of geographical papers offered at that meeting.

Only a small number of papers were presented this year, but the members interested in the formation of this section are hopeful that all the leading students of geography in the country will realize the importance of joining the Association as the best means of advancing and diffusing a knowledge of their chosen study.

Professor J. W. Powell of the Bureau of Ethnology

presented a paper on the "Water Resources of the United States." He considers that the ultimate development of the United States depends mainly upon the thorough utilization of the water resources. The vast fertile lands in the West cannot be utilized for homes for the people except by artificial irrigation. In the more thickly settled portions of the United States the water resources are of equal importance for power and for municipal and domestic supply. As the sources of supply are limited, there is urgent need of exercising much thought and skill to employ them to the best advantage. In all cases, Mr. Powell declares, the proper solution of the problem rests upon a correct knowledge of the distribution and fluctuation of the available waters. This study is now being carried on by the United States Geological Survey, and one of the first results is a preliminary map of the *run-off*, prepared in a form similar to that of the ordinary map of mean annual rainfall.

Mr. F. H. Newell, of the United States Geological Survey, dealt with the subject of "The National Domain,"—the settlement of the vacant public lands under the homestead law. He made the statement that the United States now own about one-third of the total area of the country, excluding Alaska. This land is now open to settlement, but the progress of actual occupation is slow, owing to the difficulties in the way of creating farms. These difficulties are numerous and are chiefly due to climatic conditions, and in a measure also to geologic and topographic peculiarities. In the East the mountainous, rocky or marshy character of the land retards settlement, and in the West the lack of

water makes it difficult if not impossible. Owing to the pressure for homes, however, this land is continually being taken up, and there is consequently much suffering and hardship among the settlers. Nine-tenths of all the vacant public lands, according to Mr. Newell, are in the arid and sub-humid region extending from about the one-hundredth meridian to the Pacific Coast. The remaining portions are in the Southern States and in those of the Mississippi Valley, notably Arkansas and Louisiana. The speaker illustrated the relative location, extent and disposal of these vacant lands by maps and diagrams.

Mr. Gardiner G. Hubbard read a paper on the "Geographical Development of China, Korea and Japan." He called attention to the natural features and the climatic conditions of Eastern Asia as having exerted a marked influence upon the races of mankind in that region. The fertile soil and mild climate, and the bordering mountains are all favorable to rapid and luxuriant development of animal and vegetable life. Primitive man, Mr. Hubbard believes, found these environments favorable, the climate congenial, and food, shelter and clothing easy of access. He therefore developed rapidly in this region and increased wonderfully in population, thus bringing about migrations to less favored portions of the world. The environment was, however, too favorable for a very high development, and consequently culture and intellectual progress stopped after reaching a certain stage. "The culture status of the Orient remains therefore between the Primitive and the Advanced."

THE CONDITION OF WOMAN IN ANCIENT EGYPT.

BY

DR. LYSANDER DICKERMAN.

To discuss the condition of woman is to touch one of the most delicate problems of social science. Every form of that discussion is threadbare, save one, and that is to follow patiently the course of ancient history. Through all time humanity has been compelled to interrogate the shadows which envelop its cradle. Why not? Unless we know from what point humanity started, how can we know in what direction it is moving, and that is the ultimate object of our search; the goal towards which the condition of woman is approaching.

In the poet Longfellow's Diary are these words: "Mr. Giles lectured last evening on Womanhood. I do not like to have woman discussed in public. Something within me rebels at the profanation!" I think I understand Mr. Longfellow's feeling, and it has my respect; but I have hoped that some facts of history, so gathered and arranged that this desired goal may be brought nearer and reached sooner, might be presented so delicately that no offence would be given even to Mr. Longfellow's ghost.

In attempting the history of woman's condition in ancient Egypt, you ought not to tolerate an attempt to perpetuate the memory of traditions which have no pedestal of facts to rest on. You should refuse to be

astonished at empty theories grounded on surmises. I propose to confine myself to the actual statements and representations of ancient papyri and hieroglyphic inscriptions on the walls of tombs and temples. I have ransacked these monuments from the pyramid age down to the end of the Ptolemaic dynasty, and am not aware that any important witness has failed to be summoned. I shall use the exact words of these witnesses and promise to make no addition or change which can possibly produce a wrong impression. At the same time I shall refuse to join in the recent tirade against that immortal author, fitly called the "Father of History." I believe that no writer on the primitive conditions of society is more worthy of confidence than this same Herodotus. He may have been too credulous and he may have lacked the critical spirit essential to the historian; if so, then all the more carefully and accurately does he echo the popular beliefs of his day. It is antiquity itself that speaks in his book.

The problem of social science before us is not easy of solution. You can find nothing in heathen antiquity or in the Utopias of Saint-Simon or Fourier which can vie with the extravagances of the Greek philosophers on this subject. When we read the immortal dialogues inspired by the master of all philosophy, we see what sort of a lot Socrates and Plato have cast for woman in their republic. I must not repeat their language here, it would so outrage good taste and modesty; but if you care to read the Fifth Book of Plato's Republic, you will see that there is not, in all social science, another problem which has so thrown the human mind into sad disaster. According to Plato (Timæus II.), men who,

during life, have been cowards or unjust, in their second existence become women : while men, still more vicious, are changed into various kinds of still lower animals. Says Aristotle : "There are three classes of persons who are incompetent to act for themselves : slaves, children and women." Maimonides, one of the most illustrious interpreters of Jewish law, says that "a woman, no more than a child or a slave, is fit to study sacred law." This is the wisdom of the most highly polished nations of antiquity. Consequently the wildest theories have been put in practice. Conceptions that could have been hatched only in the crazy brain of some solitary dreamer have been realized in customs and sustained by laws. A rapid review of the condition of women in some other ancient nations may make a good background for the portrait of the generic Egyptian woman.

Woman, enslaved in some lands, in others has been the sovereign monarch. In one land has been practised polygamy, in another polyandry, and elsewhere the grossest promiscuity. We need not go back to the fabulous epoch of the Amazons to find women exercising over men the most cruel tyranny. Travellers tell us that in parts of Central Africa and Southern Asia women have their harems of men, while among the Tartar-Mongols they are held in the most brutal slavery.

In early times, throughout Europe and Asia, if a man wanted a wife he bought her and paid for her. However barbarous this may seem to us, it was the first step towards civilization, the foundation of the family, the greatest boon to mankind. In China, a pub-

lic official was accustomed to assemble, at the full moon of every vernal equinox, all the males of thirty years and all the females of twenty, and those who would not and did not marry, then and there, were punished. Among the Persians and Hindoos the father who neglected to marry his nubile daughter was shorn of his paternal power. A religious law took everything under its wing. It made it the chief duty of a woman to give birth to as many children as possible. The Sistine Madonna, the mother and the little child, has ever been the beau-ideal of perfect womanhood. That picture was as common on the temple walls of Egypt, 3,000 years ago, as it is now in Christian cathedrals. "Increase and multiply" was the divine command to the Hebrews. Surrounded by enemies, they were driven to the necessity of becoming more numerous that they might be more powerful than the nations around them.

While pantheism stifled the most generous aspirations of some parts of Asia, Moses taught the Hebrews, as a fundamental principle, to cherish a trust, or confidence, in a personal God. This God had created man in his own moral image. This principle, the germ of all liberty, produced fruit even on the unpromising soil of Asia. The acceptance of this faith is the foundation of the Mosaic institutions; is the explanation of the unparalleled history of that "Peculiar People." The almost republican constitution published at the foot of Sinai only increased the independence of the patriarchal tribes, and when afterwards the Hebrews accepted an absolute monarchy, they still found in their religious faith a "high refuge" against the excesses of Oriental

despotism. The voice of the prophet was the organ of the public conscience. It made the throne of the tyrant tremble; for kings and peasants were alike tenants; the only proprietor was the Eternal.

This lofty spiritual principle was reflected in the constitution of the family; for the Lord established his covenant, not only with kings, but just as much with men, women and slaves. He is the father of the orphan; He the judge of the widow. If the patriarchal organization of the family gave the father almost absolute power, that power was impressed with a sweetness and tenderness, under the influence of the first Great Command: "Thou shalt love." This law of love protected Hebrew women even in slavery. The Orient had never heard of such generous sentiments. Yet legislation in Palestine could not break away entirely from surrounding influences. Says the preacher (Eccl. viii. 26): "I find one thing more bitter than death; the woman whose heart is snares and nets; one man among a thousand have I found, but a woman among those have I not found." Josephus says that the Essenes abstained from marriage, persuaded that among women there was not a single faithful one. That this is slander, the names of Hebrew women will testify. They had their Athaliah and their Jezebel, but they also had Miriam and Deborah, Ruth and Naomi, Hannah the mother of Samuel, Abigail the wife of Nabal, Esther the Queen of Ahasuerus, and hundreds of others of whom the world was not worthy.

In other parts of the Orient, as well as among the Hebrews, there was a custom called the Levirat. When a married man died, leaving no male offspring, his

brother or nearest relative must marry his widow, and, as the phrase was: "Raise up children to the dead man." The first male child of this union would be enrolled in the registry of the tribe, as the son of the defunct. In India and China, if the failure to raise children was due to the husband, he could lease his wife to his brother or nearest male relative, and the offspring of that lease would call the husband its father. The Hebrews would not go so far as that. Only after the husband was dead could his wife go to the nearest male relative. Under heavy penalties the widow must marry her husband's brother, willing or not. The Levirat dates back to the highest antiquity, and still exists among the tribes of the desert. In ancient Egypt, where every woman had unbounded liberty to marry or not, there could be no such custom. During the sacerdotal period the Egyptians were imbued with the belief that the greatest misfortune that could befall a man was to die childless, but they never thought of raising up a child to a dead man, and they never asked a woman to marry a man she did not love.

In republican Greece, even more than under Oriental despotism, the State absorbed the family and public law swallowed private interests. Individual rights never were so clearly defined as in Egypt and in Rome. Morality existed in the Greek mind, yet so bound up was it with the ideal, as a beautiful work of art, that what was becoming was the goal, rather than what was right. The hand of the State was manifest everywhere. It made an inventory not only of every man's property, but of the condition and government of his family. "In the time of your ancestors," says Demosthenes,

"your sons and your daughters belonged, not to their fathers and mothers, but to their native country." If, at that time the head of a family maltreated his son, daughter, wife or ward, any citizen could bring an action before the criminal court for the redress of the injured one. Public authority took them under its protecting care. The people were sovereign. The only legislature, senate, congress or parliament was the popular assembly. Over the administration of justice no sacred college of Levites or of Brahmins had a monopoly. Before a jury chosen from the masses or else by lot, all the criminal and civil judgments of Athens were settled. Eloquence was more potent than ratiocination. Not by judicial arguments did Demosthenes and Lysias seek to win the suffrages of the people. They appealed to the passions. Free, and always on the move, Athenian law was the living expression of the popular customs, sentiments and emotions of the people, more anxious for progress than any other people the world has ever seen. It was the Greeks, not only in legislation, but in the whole domain of art and science, who emancipated the human spirit and opened to mankind the road to improvement.

Now, how did this Greek spirit, sometimes playing the despot in the state, sometimes breathing the most democratic freedom, affect the private condition of woman? In all Greek cities, where public affairs were debated in assemblies, the citizen spent his time in the market-place; by turns, lawyer, judge, prosecuting attorney, legislator, administrator and soldier. If man lived abroad, woman was confined at home. She could not be admitted even to the family table, if a friend of

the family took his place there. Relegated to the gynæcium, which only the nearest relatives were permitted to enter, she might go out only on rare occasions specified by law. Thus, intercourse between the sexes was interrupted, domestic life suppressed and marriage rendered unattractive, because nothing but an odious duty imposed by the interests of the State. Says Plato in the Banquet: "We are not led to marriage naturally. It is necessary because the law demands it." How changed were those times of Solon from the high civilization of the Homeric age! "It is not chaste," says Achilles, "it is not reasonable in man not to cherish and honor his wife." "Nothing good here below," says the husband of Penelope, "is so precious as the conjugal union, over which reigns the concord of a mutual love." Arete, the wife of Alcinous, shared the honors and almost the power of her husband. "When she went into the city," says the record, "all the people saluted her. Men honoured her as a goddess and submitted to her their differences." Such were the patriarchal customs not only in heroic Greece, but in all primitive society of which history or poetry has preserved the memory. When patriarchal life gave place to life in democratic cities, when man forsook his fireside for the public assembly, then woman fell into neglect, which time rendered more and more complete. In his childhood and youth, the young Athenian received a liberal education. At maturity he began to spend his days in discussions at the Agora or at the theatre or amid the philosophic debates of the Poicile, but woman, the teacher of his childhood, she was to learn as little as possible. With her, virtue consisted in staying at home.

All that an Athenian girl needed to know was to sing and dance and figure in the chorus. The progress of civilization was always made to turn against women. The more man was elevated the more she was neglected. This is the rear view of Greek civilization.

One class of Greek women, free from domestic restraints, could mingle with men in their pursuits. Courtezans applied themselves assiduously to the most advanced studies and, in sprightliness of intellect and extent of learning, were the equals of men. Their society afforded the Greeks just the intellectual enjoyment they craved, but which they could not find at home. The most virtuous among the Athenians had no scruples about admitting an Aspasia to his philosophical conversations, though his wife, not even by her tears and in her dying hour, could attract his attention or obtain his assistance.

Monogamy, derived from Egypt, was a fundamental law of Greece. Even if it was violated, it promoted the equality of husband and wife. If the infidelity of the wife could be punished, so could that of the husband. If the husband could pronounce the word divorce, the woman could appeal to the archon to pronounce that word for her. She did not often appeal in vain; and so divorces became as easy in Athens as in that city on our western prairies, in whose suburbs, conductors of express trains are said to shout: "This train will stop fifteen minutes for divorces."

If we do not find woman more honoured in Egypt than elsewhere, we do find her position peculiar. "Egypt is the classic land of astonishments." Every institution there was affected by religious sentiment, the

family more than any other. The earliest idea of God in Egypt was that of a dual being, equally divine and glorious in both aspects of its double nature. Isis was believed to be the consort of Osiris, although they were twins, and wedded before they were born. She was inferior to him in office, though of the same nature (or essence, as the theologians call it). It was the logical consequence of this belief that Egyptian women were never bought and sold, never kept in seclusion and ignorance, never regarded as slaves or chattels, as in every other ancient nation. The remnants of this belief existed, according to Tacitus, in the superstitions of the rude but enthusiastic Germans, who saw in this frail being, whom they could sell or kill, a divine prescience, a supernatural influence over human destiny. The same idea crops out in all the monuments of the patriarchal epoch, in the Vedas, in the book of Genesis, and in the poems of Homer. In this belief there is a hidden truth. In the influence of woman, though she be relegated to obscurity, removed from the great events of the world, there is a power which no eye can see, but whose presence is everywhere felt.

In ancient Egypt woman was everywhere the equal of man. This remarkable fact is declared in numerous ways. As you know, their writing was essentially emblematical. Woman was one of their emblems, and it is interesting to notice the peculiar significance given to that emblem. In all modern representations of the virtues, you observe that the emblematic figures are women. Justice, Liberty, Modesty, Purity and the Three Graces are always women. The same custom prevailed unconsciously in Ancient Egypt. There was

a famous emblem, called in the Egyptian language the *neter tu-aut*—"the sacred support." Each Egyptian nome, or province, has its own high priest, its own guardian deity. Four times on the very ancient monuments of Egypt the platforms on which these gods are seen standing are upheld by sacred supports—*neter tu-aut*—and every time these supports are, the high priest on one side and a woman on the other; and not a female slave, but the portrait of the king's wife or daughter. Her costume and her bearing show that she is a royal woman. Thus, according to Egyptian opinion, there was no sustaining power which could raise the gods above this world, without the aid of woman. This was the exalted position which woman occupied in the divine economy. The high priest ranked next to the Pharaoh, and woman was the equal of the high priest. Ought she not to have been satisfied with her rights? She was.

On the walls of the temple of Sebûa are pictured the one hundred and eleven sons and the fifty-nine daughters of the great Ramses. It is worthy of note that these daughters are just as large as the sons. This is a significant fact, for size counts in Egypt. When Pharaoh is pictured as thrashing with his flail all the nations of the world at once, white, black and red, those nations are pigmies. Homer represents Agamemnon as larger than anybody else from his knees up, but the enemies of Pharaoh came only half way up his shin bone, and his wives were as big as he was. No woman was ever a pigmy in Egypt. The idea of the inferiority of woman never took root on the banks of the Nile. Never! The great Ramses, in

his own estimation, was very great. By his statue, once erected at the Ramesseum, he tried to show the world how great he was. That highly polished granite statue measured fifty-seven feet and five inches above the pedestal. Its ears were a yard long. The length of one forefinger measures thirty-nine inches. He thought that God never made anybody quite so large as he, anybody except one, that was his wife. He fought the Hittites for twenty years, all the time calling them "the miserable Hittites," and in battle scenes they are smaller than the Egyptians. Finally both nations agreed to call it a drawn battle. The two kings made a treaty of peace, and Ramses promised to marry the daughter of the Hittite King. We have a picture of that wedding. There sits the great Ramses beside the great God Amon-ra, and one is as large as the other. The Hittite bride enters with her royal father, and she is as large as any of them.

Egyptian women of the Old Empire were not only conspicuous in affairs of state, but they played an important part in ecclesiastical matters. Religion there was accorded a devotion of which we can hardly form a conception. This appears from their priestly system. There was the *U'eb*, or priest, who poured out libations to the God and pronounced final judgment on the purity of the animals brought for sacrifice. There was the *Cher-heb*, who read aloud from the sacred books, especially from those texts which were believed to possess an occult magic power; and there was a third class, whom the Greeks called "prophets." There were, besides, many other less important classes of priests. Almost every person of rank in the Old

Empire (*i. e.*, from the Ist to the XIIth dynasty) combined some priestly duties with his ordinary employment. This was as true of women as of men. They were numerously invested with priestly office. Prof. Ebers explains this in his novel entitled "The Sisters." Generally they were consecrated to Neith or to Hathor, that is, to the generating or nursing powers of nature personified.

In the Middle Empire (from the XIIth to the XIXth dynasty) the laity began to be excluded from the priestly office, except that each prince of a nome (or province) continued to officiate as the priest sacred to the local God of that nome; and his wife was the priestess of that nome. These were the *neter tu-aut*, supporters of the pedestal on which the God stood.

In the later Kingdom (from XIXth dynasty onward) we observe a new departure. There was scarcely a woman, married or single, who did not serve in the temple, either as vocalist or musician, or in some other capacity. The wife of the high priest (observe there was no celibate class in Egypt) and her domestic went and sung or played together in the same choir. Mariette found in a tomb at Abydos an epitaph of the daughter of a stonecutter, who was a priestess. In another tomb, the two wives of a cobbler are in the costume of songstresses, and one of them is called "the songstress of Amon." In still another grave, the wife of a weaver is said to belong to the priestly class. The establishment of this office is interesting in consequence of the ideas with which it was associated in the Egyptian mind. They compared the God to the earthly priest or prince, and the female musicians who played

before him were supposed to contribute to the God's pleasure, just as the women of a harem did to that of the priest or prince. Thus these temple singers formed the harem of the God ; and as on earth, so in heaven, there were different grades among the Delilahs. A few women of high standing had the right to wear the beautiful and honourable title : " The Lady Superior of God's Seraglio." At the very summit of this mystical harem, especially at Thebes, was one legitimate spouse, " the God's Wife," or " the God's hand," or " the adorer of the God," to whose house all the other songstresses belonged. This woman was usually the queen herself. During the Saïtic period this woman was the nominal monarch of Thebes, and certain inscriptions seem to imply that she held the same position at the beginning of the XVIIth dynasty. Queen Hatshepsu, one of the most remarkable women in the history of the world, was herself the high priestess, and equipped a magnificent naval expedition to Punt, largely to procure incense for the use of her rock-hewn temple.

Everybody has heard of the royal mummies exhumed by Professor Maspero at Deir-el-Bahari, in the summer of 1881. In February, 1891, a not less valuable discovery was made by Monsieur Grébaut, near the same place. Nearly fifty feet below the surface he struck a rock-cut chamber in which were one hundred and eighty mummy cases, piled one above another. Closer examination proved them to be filled with priests and priestesses of Amon. Some of them were enormous triple mummy cases. There were numerous other funerary objects, especially fifty Osirian statuettes.

They all belong to about the XXIst dynasty. Not far away and near the beautiful temple of Hatshepsu was found an undisturbed tomb of a priestess of Hathor of the XIth dynasty. Her trousseau, buried with her, had not been made up. It consisted of several pieces of exceedingly fine, uncut linen neatly folded. The point I want to make is, that of these one hundred and eighty mummy cases, more than half belonged to priestesses. No official report to this effect has ever been made, so far as I can learn, but this is the positive statement of friends of mine, competent to judge, who stood in the line and saw the mummy cases brought up from the bottom of the well by a rope ; and they afterwards learned from the officials at the Gizeh Museum, that the priestesses in the collection largely outnumbered the priests. The tombs are yielding up their dead, before their time, to tell of hundreds of women who consecrated their lives to the ancient church.

Egyptian women of the common and middle classes were more independent than women of the same rank elsewhere. Daughters inherited from their father's fortune a share equal to that of their brothers. The wife was the mistress of her house, and the husband was there only as a privileged guest. She came and she went at her pleasure. Unlike the women of Syria, she entered the society of men with face uncovered. With us it is in good taste for a woman to be arrayed in gay colors and be decked with ornaments ; not so for men ; but in Egypt it was just the reverse. In comparison with the elaborate costume of men, the wardrobe of women was remarkably simple. From the King's daughter to the peasant, and from the IVth to the

XXth dynasty, all females were robed in the same fashion; and that fashion did not change with the arrival of every steamer or cablegram from Paris or London. It was a single garment, without plaits or wrinkles, fitting so closely to the body that the form was plainly visible. It began under the breast and extended to the ankles. Two straps passing over the shoulders kept it from slipping down. Sometimes the braces were omitted, and then nothing held the dress in place but its tightness. Dress and shoulder straps were of the same color, white, red or yellow. There was no difference between the costume of mother and daughter, between high-born and servants, except perhaps a little embroidery or other decoration in the upper seam. The woman's forehead, chin and bosom were delicately tinted with indelible tattoo, her lips were painted red and around her eyes were borders of black, which extended over her temples almost to her hair. The powder which she used for this purpose was a mixture of antimony and carbon pounded fine. This decoration was supposed to enhance the whiteness of the complexion, give brilliancy to her appearance and protect her eyes from ophthalmia. Her black hair oiled, often tinted blue, extended over her neck and shoulders in small ringlets. Since it required several hours to arrange her hair fashionably, the custom was to dress it only at intervals of ten or twelve days. Feet were bare, like the arms, neck and shoulders, except on feast days, when sandals from the leaves and rind of the papyrus were allowed. Glass bracelets attracted attention to wrists and ankles. A deep collar of pearls or of bugles of enamelled glass, a headband of

flowers on the forehead, completed the costume of festive occasions and supplied the defects of too great, ordinary simplicity.

Very rarely we observe a dress of different style and fabric. 'Ete, the wife of Se-chem-ka, a boss farmer, wore a white dress richly embroidered with variegated pearls, which extended over the breasts between which a triangular piece was cut out. This dress was held up by a girdle without shoulder braces. Somewhat more common, was a dress which covered the shoulders but without sleeves. The neck was V shaped, and over this dress a mantle was thrown.

The wife was the force which set the whole house in motion. She arose at dawn, lighted the fire on the hearth-stone, distributed the rations of the day to the men going to the workshops or field, to the boys and girls going to watch the cows and goats at pasture, and then, when rid of everybody, went down to the nearest water, either canal, pond or river, and while exchanging news with her neighbor, took her morning bath; then, putting her water jar on her head, she returned slowly home; back erect, breast thrust forward, neck rigid under her burden. She soon returns with another jar. When the business of water-carrier is over, she turns miller and baker. She puts a few handfuls of grain on an oval stone, whose concave surface is gently inclined, and grinds her grist with a smaller stone shaped like a grindstone. For hours she works her arms, shoulders, back, whole body to obtain meal enough for one day. The effort is great, the result small. Even after the product of this toil has passed several times through the mill, it is uneven, coarse,

mixed with bran and with grains still unbroken, besides dust, dirt and fragments of stone. She kneads the mass, mixed with a little water, and by way of leaven puts in a bit of paste, and sets it away till morning. Then in the shape of a round cake as thick as her thumb, half a yard in diameter, she spreads it over some hot flat stones and covers it with hot ashes. The fuel she uses, made from the ordure of donkeys and camels, gives the bread a peculiarly disagreeable acrid taste.

Between times the wife cooks, spins, weaves, sews, cuts and makes garments, goes out to sell her doves, chickens, eggs, butter or the cloth she has woven, it is hoped without serious detriment to the squalling young ones she has left at home, or to the new-born babe at her bosom. Married young, a mother at fifteen, a grandmother at thirty, her family grows without respite, swarming around her. A numerous family is regarded as a blessing from the gods, welcomed with all the more gratitude when the trouble and expense are small. Is it a wonder that such a woman grows prematurely old as the result of early and frequent child-bearing and unremitting toil? Her face becomes sunken and wrinkled, breasts deformed, form stooping, and she is decrepit at an age when the favoured women of the United States of America hardly begin to grow old. Yet her position in the family is not affected by her premature disfigurement. She still remains "the mistress of her house," and "the one beloved by her husband." These are the names by which the wife of Ti is called in his famous tomb at Sakkara. Elsewhere a man calls his better half "a palm in loveliness."

Another inscription says: "The one who is esteemed by her husband," and still another, "She who loves her husband." Says Dr. Brugsch, the late Dr. Brugsch—we could have spared any other Egyptologist better—"We meet here, as at the entrance to a beautiful passage way, the Egyptian custom of mutual love between husband and wife, on which was founded the honorable relation of monogamy; a love which is demonstrated again and again in the inscriptions above the dead." Children designated their parentage by the mother's name, not by the father's. In this the gods set the example, for Horus is often called the son of Isis, with no mention of his father Osiris.

The Egyptian father was pleased with the honour thus conferred on his wife. Says the sage Khoun-shot to his son Ani: "Burden after burden has thy mother borne for thy sake. For three years she fed thee from her bosom, cared for thee in thy weakness and repulsive necessities; yet her heart was never once impatient enough to ask 'why need I impose on myself this burden?' Now, when thou shalt be grown up, and shalt take to thyself a wife and shalt become master of a family, always remember the painful throes of thy birth and the tender care thy mother has taken of thee. Never once has she needed to raise her hands to the gods, that they might pity her impatient curses."

Monogamy was the prevailing custom in Egypt, but this good custom was dishonoured by many a breach. The Ptolemies, for political purposes, often added to their households the heiress of some coveted province. In the reign of Auletes, a high priest who ought to have known better, openly boasted that he had a harem

of beautiful women. Khnum-hotep, of the XIIth dynasty, had a wife Ketty, who bore him three sons, as the record says, "generated by his own body." He also had two sons by his *tatet*, *i. e.*, his housekeeper. This *tatet* goes hunting with him, sitting in the boat behind his wife Ketty, and wearing fewer ornaments. In hunting scenes, woman, for obvious reasons, is not so large as man.

In the XXth dynasty there was a famous criminal suit, of which we have a full report. A gang of tomb robbers were arrested, tried, convicted and punished. One of them, whose name is illegible, is said to have had a wife Tahala, "and also, a woman Jasui, his other wife, number two."

When Amen-hotep III. received his wife Thi, the daughter of the Prince of Naharina (perhaps Mesopotamia), there came with her, for the harem of the great Pharaoh, 317 of their most distinguished women. This shows what the influence of Assyria was on the social question.

Climate has much to do with character. As we approach the torrid zone we not only approach a riot of vegetable life, but we also find the restraints of moral life loosened, and even intellectual life taking on startling efflorescent forms. On the other hand, when we set our faces towards the chaste and self-contained north, we find the human soul girded to more reserved and temperate activities.

No man can shut his eyes to the fact that the moral principles of the ancient Egyptians, respecting social questions, were as lax as those of classical antiquity. No man can cherish a doubt about the freedom with

which they represented, in their hieroglyphics, incidents in life, which according to modern sentiments, ought to be and are scrupulously concealed. A caricaturist, of probably the Middle Empire, with evident pleasure, left a long series of obscene pictures, and accompanied them with notes of explanation. Now, this precious work was found in a grave, not the place in which coarseness is wont to run riot, and was intended as a pleasant reminder to the dead man, just starting, after the resurrection, on his long journey. Evidently it suggested, neither to the author nor to the recipient, the shadow of an impropriety. Moreover, in the recently opened tomb of Unas, of the Vth dynasty, is an inscription which portrays the blissful life of the departed King. The promise is given him, in not over-clean language, that in heaven he may take women from their husbands, according to his own sweet will.

The freedom of such language, even amid the most hallowed associations, reveals habits of thought and speech which we, otherwise, could hardly imagine. Yet, their line of demarcation between the pure and the impure is very distinct. The hieroglyphics uniformly speak disparagingly of her who has been abandoned by her husband for cause and who therefore tramps the streets. "Beware," says the wise man, in the Boulaq Papyrus, "beware of an out-of-doors woman, who has no protector. Do not look at her when she approaches thee. Salute her not. She is an eddy of deep water, whose whirlpool no man can resist." In this connection they had a proverb: "The goose on the wing laughs at the crocodile, but when the goose is asleep on the water, it is the crocodile that laughs." Sometimes

those old Egyptians looked on the other side of the picture. Says the Egyptian moralist: "Happy is he who is wise enough to shun the company of the vile woman: Happy he, who, in his youth, takes to himself one wife, the wife of his youth, who will present to him a son like himself." No page of Egyptian domestic life, or of any other life, contains a more lovely picture than that which shows their idea of conjugal affection. That affection was not always absent even when there was a plurality of wives. On the walls of the rock-hewn tomb of Beni-hassan, in the inscriptions of the glorious XIIth dynasty, the wife Nebit has two sons and three daughters, and the woman Hamat has one son and three daughters. Their names are all cut in the solid rock; and what is especially noticeable, is that each one of these wives has a daughter named after the other wife. Once, then, in the history of this world, the two wives of one man lived peaceably together; a fact so strange that it is worthy to be cut in stone, that it may be remembered through countless millenniums.

The Egyptians had a strange custom of marrying their sisters. During the Ptolemaic and Roman dynasties, this became the popular fad. The most of the Ptolemies married their sisters, and during the reign of the Emperor Commodus it is said that three-fourths of the citizens of Arsinöe had taken their sisters to wife. In this the gods had set the example, for Osiris and Set had taken for wives Isis and Nepthys, their sisters. In the XVIIth dynasty, Nofertere was the consort of her brother Ahmose, Ahmu was the consort of her brother Thothmes I., and Arat was the consort of her brother Thothmes IV., and

the famous Hatshepsu married her brother Thothmes II. A girl sings to her brother: "Oh, my sweet lover! My desire is that I may become thy wife, that my arm may rest on thy arm; that thy life may be gay and happy, for then I can say to my heart: 'It was I who spoke words of love to thy heart.'" In these numerous love songs and marriages between brothers and sisters, perhaps we may conclude that there were different kinds of "sisters." The wife may have sustained a more honourable, if not a more intimate relation, than the so-called "sister." Two quarrymen going down the desert of Sinai took with them their "sisters" rather than their wives.

It has been maintained that consanguineous marriages are such offences against nature that their offspring are the victims of physical or mental weakness. Well, there was Cleopatra, the most romantic of Egyptian sovereigns, the daughter of a brother and sister; the great grand daughter of another brother and sister; and the great, great grand daughter of Bernice, who was both cousin and half sister of her husband. This same Cleopatra wedded her younger brother. Yet history has not regarded her as an imbecile, either in mental or physical qualities. She was not an albino. Her charms and accomplishments won a Cæsar; and then won Cæsar's friend, Marcus Antonius, one of the greatest orators and soldiers of antiquity. Blinded by her allurements, he neglected the world and for her sake surrendered his life.

Among the most important discoveries ever made in Egypt are numerous marriage contracts dating from the time of Bocchoris, of the XXIVth dynasty, to the

Greek and Roman dynasties. The form which these contracts took is as follows:

1. I take thee to be my wife and will establish thee as my wife.
2. I promise as a nuptial dowry—so much.
3. I appoint our eldest son (yet unborn) to be the heir and administrator of all my property.
4. In case I shall dislike thee and take another wife, I promise to pay thee so much. (This was the loop-hole which let in polygamy.)
5. I promise to give for thy support—so much corn, oil, or money, by the month or by the year. (Sometimes the first clause, "I take thee to be my wife," is omitted, then the contract was not of marriage, but of something else.)

This form of marriage contract stood for generations, for centuries, without material change. When the Greeks had conquered Egypt and established their capital and courts of law at Alexandria, the wife begun to find it difficult, sometimes impossible, to compel the fulfillment of that clause in which the husband promises to pay a fine in case he shall take another woman. This difficulty was greater at Memphis than at Thebes, because Memphis was nearer to Alexandria and, therefore, more exposed to Greek influence. What, then, did the young Memphite woman, just contemplating marriage, do? Accept polygamy as inevitable and without redress? Not she! Egyptian history affords no encouragement to those who would prove the mental inferiority of woman. There never was an emergency

for which woman had to confess herself unequal. What, then, did the Memphite girl do? How did she contrive to outwit those cunning Greek lawyers? She inserted in the marriage contract the man's receipt for a sum equal to his entire estate, in return for property which she pretended to have brought to his house. If the young suitor demurred, he could go. No receipt, no marriage. Women struck. We have a contract written in the reign of Euergetes I., about 150 B. C. At this period it was usual, in the contracts, for the husband to address his wife. The contract reads as follows: "Petese, son of Petimouth, whose mother is Heribast, says to the woman N'tuoa, Thou hast brought with thee ten talents. I have received them with my hand. My heart is satisfied with them. I take thee to be my wife; I will establish thee as my wife. While thou shalt remain here, these ten talents shall be thine. If thou shalt become dissatisfied with me and go away, these ten talents shall still be thine."

Now these pretended ten talents are a pure fiction, and in Greek law, at that time, a significant fiction. Even Greek archons, however reluctant, were compelled to admit the validity of a note of hand for value received, even if after the date of that note the parties became husband and wife. Previous to this period, the Egyptian husband was supposed to have paid a dowry to his wife. Henceforth, the wife is thought to have brought a dowry to her husband and to have taken for it his receipt, had it witnessed and recorded in legal form. Suppose, before marriage, a man promises his bride a thousand dollars. Two days after marriage, for some reason, he becomes insolvent. Then the wife

must share with the other creditors; but, if the husband has already acknowledged the receipt of a thousand dollars as trust funds, which he promises to care for as her guardian, and if that receipt has been publicly recorded, then the wife is a preferred creditor, and has a first general mortgage on all his estate. Under this new arrangement the wife was not so careful as before to affix a penal clause, premising the infidelity of the husband, for had she not complete possession of all his property, anyhow? What more could she have? She can therefore afford to omit the clause: "If I become dissatisfied with thee and take another woman I will pay thee so much," and inserts instead a declaration of her right to become dissatisfied with him and go away whenever she pleases.

At another period in Egyptian history, it is the woman who, in the contract, addresses the man. In the fourth year of Psammetichus III., the woman T'nesi, daughter of Anach-amen, says to Amon, son of Put'a: "Thou hast this day paid me the price agreed, that I should become thy servant. Nobody in this world shall be able to deprive thee of my service. I will never escape from thee. I will give thee all that I possess, money, corn, oil, all my property and the children that I shall bear to thee, and the clothes that are on my back, from this 4th year and month *mesoré*, forever. If any one shall come to thee and shall endeavor to make thee ill at ease about me, whatever words he or she may use, even if she shall say "this is not thy servant," and shall give thee money or corn, and shall try to win thy heart, I will still be thy servant, and my children shall likewise serve thee. Thou art their

master wherever thou shalt find them. Make oath to me by Amon, and according to the law, that thou wilt take no other woman and do for her what thou wilt do for me, and on my part I will take oath that I will never escape from the room where thou dost live."

It is evident that Amon, son of Put'a, does not propose to marry a wife. Not at all. He has simply bought a female slave. In Egyptian law a man might buy as many such slaves as he could find willing to enter into contract with him. What could be more pathetic than the cry with which this woman T'nesi abandons to her lord and master, all claim to present and prospective property, even to her children, and to the clothes upon her back? Yet it shows that woman in Egypt, at this period, was the equal of man, as free as he to enter into contract or not.

According to another contract, made in the time of Darius, the woman Isis says to the Choachyte Chent-Haeroon: "Thou hast taken me, to-day, for thy wife. Thou hast given me eleven argentei (fifty-five talents) for my nuptial dowry. If I shall be displeased with thee and shall love another man instead of thee, I will give thee nineteen argentei, and besides, will convey back to thee the eleven argentei which thou hast given to me for my dowry. If I shall fail to keep this promise, then I will deed to thee all the property which I possess or shall acquire. I will make no excuses and no defence for not making this conveyance to thee." The point I am trying to make, in presenting these contracts, is, the perfect liberty, the entire equality before the law of the Egyptian man and the Egyptian woman. They show an equality that enabled the woman to claim, word

for word, the very rights which it had once been the exclusive prerogative of the man to claim. Nowhere else in the ancient times, was there any parallel to this condition of woman in Egypt. There was a community of interest, a complete union, dissolved only by death. It was not an affair of money solely. Affection played a preponderating part, and the pecuniary clause was only accessory.

There is, however, one contract, wholly exceptional, because it is a purely commercial transaction. It was given in the seventeenth year of Ptolemy III., who reigned from 247 to 222 B. C.

Petkes, a merchant, had some rather intimate relations with a beautiful young girl. Young girls in Egypt, as everywhere else, have a leaning towards beauty. Detected by her parents, Petkes was surprised by a sudden demand for blackmail. An attachment was put on his property. Then the old folks began to suspect that their attachment might not be valid in law, for they were not quite prepared to show any "value received" by Petkes. What did they do? They contrived a fictitious marriage. We have seen to what use fictitious dowries were put, now the game is carried one step further. A marriage contract was drawn which made provisions for an immediate divorce. Petkes says: "I take thee, Tanope, to be my wife. I have established thee as my wife. Yet I yield to thee a woman's right. I will never try to revoke that right. From this day on, I will acknowledge thee to be my wife, but I will not claim thee. I will not demand of thee that thou shalt be my wife. Without any opposition from me, thou shalt go where it shall seem good

to thee." Then follows a description of the property which Petkes deeds to Tanope. On the back of this contract are the names of sixteen witnesses, enough to make it strong. Poor Petkes! bound hand and foot, without an argenteus in the world, a married man, but on his wedding day and wedding night, without a wife or a bride.

During the administration of the IVth Ptolemy (Philopater), who reigned from 222 to 205 B. C., two causes led to the restriction of the legal powers of married women. 1st. The invasion of Greek ideas, which were not so favourable to women as were those of Egypt; and while Greeks ruled Egypt, this restriction was inevitable. 2d. Egyptian women, in some cases, had abused their rights. They had allowed themselves to extort immense advantages by marriage contracts. The wife, sometimes, took possession of all the property which she and her husband held in common, and administered the estate in a way to compromise the dignity of the husband. Philopater, perhaps the vilest of all the Ptolemies, the man who abandoned his kingdom and threw it into utter confusion for the sake of the infamous woman Agathoclea, this Philopater was so scandalized on account of the liberties enjoyed by Egyptian women, that he planned and executed one of the most remarkable revolutions in the history of the world. Yet, properly speaking, he did not diminish the legal capacity of woman. As daughter and as widow, he left her free to buy, sell, mortgage her property or endorse for a friend, but when she married, all this right disappeared. She could not make a single commercial transaction without

the authority of her husband. What this authorization was, is evident from a conveyance made a few years later. Pasi, son of Harmachis, who is husband of the woman N'toua, says: "As to the above contract, made by my wife, my heart is satisfied with it. I grant to thee and I convey to thee all that my wife has conveyed to thee above. I will make no reclamation from thee. From this day on I will defend thee against all who shall seek to disturb thee in this possession."

Under the reign of his predecessor, Ptolemy Euergetes, a wife could dispose of her property as she pleased, but from this fourth year of Philopater it is the husband alone who can dispose of the property of his wife, and she must submit. It was as though all of a sudden every married woman in Egypt became dispossessed of all her property; of every building and foot of land she owned; of every certificate of stock; of every dress, ornament, sandal or shoulder-strap, even of the ostrich feather she wore on her head, all were restrained. What use in her pretending to own anything which she could not dispose of? Here ended Woman's Rights, 218 B.C. It was a most sweeping revolution. It was a social earthquake. Gifts of property between husband and wife ceased. Some mild and gentle women may have yielded without violence; others yielded, if at all, only under extreme compulsion, and many a husband paid his life as the penalty for his audacity in meddling with property which he had never earned, never paid for, and to which, but for Philopater, he never could have acquired a title. By degrees customs conformed to laws, and Egyptian women tried to content themselves with a legal condition no better and

no worse than that of women in other lands. Strange to say, this Greek fraud, this outrage of the profligate Philopater, became the common law of England, and remains so to this day! Thus the high civilization of Egypt in the third century B.C. was debased to the level of that of the British Empire in the nineteenth century A.D. "*Facilis descensus Averno.*"

It was those old laws and customs that had given to

> "The land where the feathery palm trees rise,
> And the date grows ripe under sunny skies,"

so many women of high culture and of extended influence, and it was the absence of such laws that explains the absence of woman's hallowed influence elsewhere. Who, for instance, knows the name of one Turkish woman who lived during any part of the period of Egypt's greatness, or since either, for that matter? But in Egypt there was Nitocris, sister of Mense-souphis, of the VIth dynasty. She was called "the beauty with red cheeks." She accepted the throne of Egypt that she might avenge the foul murder of her brother. During the eight years of her reign she completed the third Gizeh pyramid, which Men-kau-ra had left unfinished. She more than doubled its dimensions, and gave it that costly covering of granite which has excited the admiration of travellers for 4,000 years. In the very heart of this pyramid, above the chamber where the pious Men-kau-ra had for eight centuries reposed, Nitocris was entombed, in a magnificent sarcophagus of blue granite, fragments of which are in the British Museum.

Coming down to the XVIIth dynasty we meet with Queen Hatshepsu-Makara-Chnemt-amen, the patron of the most chaste art to be found in Egypt, the originator

of the first peaceful voyage of discovery of any magnitude ever made. For her age, she was both Christopher Columbus and Queen Isabella combined. She kept Egypt in perfect peace during her entire reign of nineteen years, one of the greatest anomalies in all history. What other ancient nation ever had a peace of nineteen years' duration? It was she who invented peace and national prosperity, for they never existed before. And what shall I say more? For the time would fail me if I should tell of Nefer-taten-tenen of the XIIth dynasty; of Futhe-tabu and Queens Sebsen and Kema and Nubuk-ka, of the XIIIth dynasty; and Aa-ho-tep and No-fre-ari of the XVIIth dynasty, and the divine Tai-ri-bau, and Sit-ka-mu and the royal sister, Meri-amen and the divine spouse, Ahmes and Me-seker and Maut-m-ra and Queen Nofert-eiti of the XVIIIth dynasty, and Nofert-ari, the beloved wife of the great Ramses, who subdued kingdoms, wrought righteousness, from weakness were made strong, and turned to flight the armies of aliens.

In bringing our narrative to a close, the question will arise, how, from all these facts, can we draw the just impartial lesson? In the good time coming, what will be woman's relation to society, to the family, to the State? Either the testimony of history is without authority, and all the lessons of the past valueless, or else we are forced to recognize that one grand and unmistakable law of social progress points to the gradual equality of the sexes before the law. Wherever and whenever a step has been taken towards recognizing the civil and political equality of woman, then and there public morality has not only been polished but

purified. No change has ever been effected in the condition of woman which has not reacted upon the whole constitution of society, root and branch. Whenever man has attempted to degrade woman, he has succeeded only in degrading himself. Whenever he has disregarded the rights of woman, he has lost his own rights. In those lands where woman has been treated as a slave, man has lost the idea of freedom. Marriage has been more durable, just in proportion as the human race has arisen to higher degrees of civilization, for a considerable amount of civilization is essential to the formation of any permanent conjugal union. To the question then: "Is marriage a failure?" the answer is very simple; that all depends on who is married. As Montesquieu has said: "Those countries, in which polygamy is allowed, are the fatherland of despotism." Wherever woman has been the property of man, man has been the property of the despot. That was the tendency even in Greece. He who has been a tyrant in his seraglio has been a slave everywhere else. Even where woman has preserved her independence but lost her modesty, where looseness of morals and easy divorces have dishonoured marriage, there personal dignity among men has been unknown, and corruption, concealed perhaps at first, has invaded the whole social system. On the contrary, wherever institutions have assured to woman her liberty, her civil rights, her moral dignity, we have seen flourishing, as on a productive soil, domestic and civic virtues, the liberties of man and of the citizen. Even when secluded by unjust laws and customs, out from her prison has escaped, as though by some secret channel, a power which has ex-

tended into every vein and artery, nerve and fibre of the State. The one thing we have needed here in our city is more of the power of woman. We are going to see that want supplied now.

What else remains to be done? Our humane societies, our institutional churches are doing a much-needed work. Respecting them, let no word or hint of detraction be thought of here. Their Girl's Clubs and Boy's Clubs, their kindergartens, their sewing schools and cooking schools, their libraries and fresh-air work and scores of other philanthropies too numerous to be mentioned, are important, worthy of commendation. All praise to the merchant princes who have endowed them, to the loving hearts that, amid self-denials, have cherished them; but, we must never forget, that the foundation of all humanities must be laid in the home. The home neglected, what are your philanthropies worth? Society will rise no higher than its families. Nothing in all this world needs the sympathy, the expression, strength and wisdom of a love at once human and divine so much as does the family, and especially the heart of her who bears the honoured name of wife and mother; the dearest, most precious words ever uttered. There are no other names more replete with tender meaning, more suggestive of self-abnegation, of a hallowed influence that never dies:

> "The mother in her office holds the key
> Of the soul; and she it is who stamps the coin
> Of character, and makes the being who would be a savage
> But for her gentle cares, a Christian man.
> Then crown her Queen of the World."

GEOGRAPHICAL NOTES,

BY

GEO. C. HURLBUT, *Librarian.*

THE PILOT CHARTS OF THE NORTH PACIFIC AND THE NORTH ATLANTIC OCEANS, for December, issued by the U. S. Hydrographic Office, note two remarkable changes in the deviation of the compass. In the first case a meteor passed close to the Br. Steamship *Nerano*, in latitude 49° 42′ N., longitude 13° 30′ W. A bearing of the North Star, taken soon after, showed that the deviation of the compass had changed from 5° 30′ West to 5° 30′ East. Subsequent observations indicated a gradual change to the old position, 5° 30′ West, 24 hours after the passage of the meteor.

The second instance was that of the Steamship *El Sol*, an iron vessel with iron masts. The foremast was struck by lightning, while near the Dry Tortugas, and the effect on the pilot-house compass, ten feet abaft the foremast, was to reverse its magnetism, the north point becoming the south; while the bridge compass, ten feet further aft, showed a change of from four to eight points. The other compasses, which were at greater distances from the foremast, also exhibited serious changes.

TOPOGRAPHICAL ATLAS OF THE UNITED STATES.—The following sheets of this atlas have been received from the U. S. Geological Survey:

California: Big Trees, Lodi, Marysville, scale 1 : 125,000.

Colorado: Aspen, special, scale 1 : 9,600; Castle Rock, Pike's Peak, scale 1 : 125,000.

Idaho: Idaho Basin, Nampa, Rocky Bar, Silver City, Squaw Creek, scale 1 : 125,000.

Kansas: Beloit, Ellsworth, Mankato, Pratt, scale 1 : 125,000; Sitka, scale 1 : 62,500.

Louisiana: Bayou de Large, Chandeleur, Dulac, Lake Felicity, Timbalier, scale 1 : 62,500.

Maine: Gray, Norridgewock, scale 1 : 62,500.

Montana: Fort Custer, Rosebud, Saint Xavier Mission, scale 1 : 125,000.

New York: Buffalo, Durham, Elizabethtown, Elizabethtown (Ausable), Kaaterskill (Durham), Niagara Falls, Niagara Falls and Vicinity, Port Henry (Willsboro), Wilson, scale 1 : 62,500.

North Dakota: Fullerton, Oakes, scale 1 : 62,500.

North Dakota—South Dakota: Ellendale, Hecla, scale 1 : 62,500.

Oregon: Ashland, scale 1 : 250,000.

Pennsylvania: Allentown, Bloomsburg, Shickshinny, Wilkesbarre, scale 1 : 62,500.

South Dakota: Conde, scale 1 : 62,500; Deadwood, Hermosa, scale 1 : 125,000.

Texas: Fort Hancock, Hamilton, Salt Basin, scale 1 : 125,000.

Vermont: Londonderry, scale 1 : 62,500.

Virginia: Bermuda Hundred, Petersburg, Richmond, scale 1 : 62,500.

Virginia — West Virginia: Pocahontas, scale 1 : 125,000.

Wisconsin: Portage, scale 1 : 62,500.

BULLETINS OF THE U. S. GEOLOGICAL SURVEY recently issued are:

No. 97. The Mesozoic Echinodermata of the United States. By William Bullock Clark.

No. 98. Flora of the Outlying Carboniferous Basins of Southwestern Wisconsin. By David White.

No. 99. Record of North American Geology for 1891. By Nelson Horatio Darton.

No. 100. Bibliography and Index of the Publications of the Geological Survey, with the Laws governing their Printing and Distribution. By Philip Creveling Warman.

No. 101. Insect Fauna of the Rhode Island Coal Field. By Samuel Hubbard Scudder.

No. 102. A Catalogue and Bibliography of North American Mesozoic Invertebrata. By Cornelius Breckinridge Boyle.

It is not satisfactory to read in the preface that, because of subsequent changes in State and Territorial boundaries, there may be difficulty in recognizing the localities mentioned unless Bulletin No. 13, in which these changes have been recorded, is at hand for reference. A few words added, in parenthesis, would have explained every such case.

No. 103. High Temperature Work in Igneous Fusion and Ebullition, chiefly in relation to Pressure. By Carl Barus.

No. 104. The Glaciation of the Yellowstone Valley North of the Park. By Walter Harvey Weed.

No. 105. The Laramie and the Overlying Livingston Formation in Montana. By Walter Harvey Weed, with Report on Flora by Frank Hall Knowlton.

No. 106. The Colorado Formation and Its Invertebrate Fauna. By Timothy W. Stanton.

The geological introduction gives the history and definition of the Colorado formation, and lists which show the vertical range and areal distribution of most of the species described. Thirty-nine of these are believed to be new to science.

No. 107. The Trap Dikes of the Lake Champlain Region. By James Furman Kemp and Vernon Freeman Marsters.

No. 108. A Geological Reconnoissance in Central Washington. By Israel Cook Russell.

The region traversed embraced about 10,000 square miles, in the arid district east of the Cascade Mountains, with drainage to the Columbia River. The reconnoissance was undertaken for the purpose of ascertaining to what extent the conditions favoured the project of obtaining water by means of artesian wells; and the general conclusion is unfavourable to the project. The principal formation in Central Washington is a series of lava sheets, which extends south into Oregon and California and east into Idaho. This sheet, it is thought, covers not less than 200,000 square miles to an average depth of about 2,000 feet.

No. 109. The Eruptive and Sedimentary Rocks on Pigeon Point, Minnesota, and their contact phenomena. By William Shirley Bayley.

No. 110. The Paleozoic Section in the Vicinity of Three Forks, Montana. By Albert Charles Peale, with Petrographic Notes by George Perkins Merrill.

No. 111. Geology of the Big Stone Gap Coal Field of Virginia and Kentucky. By Marius R. Campbell.

Nos. 112 and 114. Earthquakes in California in 1892 and 1893. By Charles D. Perrine, of the Lick Observatory.

These lists contain records of the shocks observed or felt on Mount Hamilton and all those reported to the Lick Observatory by letter, as well as newspaper reports of earthquakes occurring in the State in 1892 and 1893. Mr. Perrine has added also, though on what principle it does not clearly appear, some twenty reports of earthquakes in Oregon, Washington, New Mexico, Chile, Mexico and Alaska, besides a long account of an explosion of a powder mill near San Francisco, and another of a volcanic eruption in the Aleutian Islands. There is in many of the reports an evident desire to make the most of the occasion, and this does not add to the value of the record.

No. 113. Report of Work done in the Division of Chemistry during the Fiscal Years 1891–'92 and 1892–'93.

Three Geographic Dictionaries—No. 115, of Rhode Island, No. 116, of Massachusetts and No. 117, of Connecticut—close the list. These dictionaries, the work of Mr. Henry Gannett, are designed to aid in finding any geographic feature marked upon the atlas sheets of the respective States published by the U. S. Geological Survey ; and no other. Even with this limitation, the dictionaries will be found very useful for reference; that of Connecticut, for instance, giving nearly 2,000 names of towns, villages, rivers, brooks, hills and mountains, and, for the last two, the altitudes.

THE DURATION OF NIAGARA FALLS was the subject of a paper read before the American Association for the Advancement of Science, last August, by Dr. J. W. Spencer,* whose method of determining the age of the falls is by the application of the mechanics of the river to the various conditions in the changing episodes of its history.

This method he claims as in a large measure his own discovery, made during the last fifteen years; and, according to him, it differs from that of other writers who have simply divided the length of the chasm excavated by the retreating falls by the imagined, or measured, rate of the recession of the cataract.

An approximately correct estimate was made by Lyell upon a conjecture of the rate of recession now known, as Dr. Spencer says, to be wholly erroneous. He adds that several writers within the past eight years have been using corrected coëfficients of retreat, and yet with results more inaccurate than the guesses made nearly a hundred years ago.

This may be called a discouraging state of things;

* See *Abstract* by the author, in the *American Naturalist* for October, 1894.

but Dr. Spencer comes to the rescue and sets forth the episodes of the river :

1st. Water descending 200 feet, volume 3-11 of the present, chasm excavated, 11,000 feet ; *Time*, 17,200 years.

2d. Descent of the river in three cascades, aggregating 420 feet, with only the Erie drainage during a recession of 3,000 feet, and with the present volume for a recession of 7,000 feet ; *Time*, 10,000 years.

3d. River descending 420 feet in one cascade, with the present volume, recession, 4,000 feet ; *Time*, 800 years.

4th. Water descending, for the most part, 320 feet, recession, 11,500 feet ; *Time*, 3,000 years.

The age of the Falls, by this computation, is 31,000 years ; to which Dr. Spencer adds 1,000 years for the time during which the river flowed from lake to lake without a fall.

It is further estimated, he says, that, with the earth movements continuing as at present, the end of the Falls will be effected by the change of the drainage from the Niagara River to the Mississippi by way of Chicago, through the rise of the eastern rim of the Erie basin above the barrier which now separates the lake waters from those which find their issue in the Gulf of Mexico ; and the future life of the Niagara River ought to be 5,000 or 6,000 years.

The time is short, but we know the worst, and there is comfort in the reduction of Lyell's 35,000 years to 32,000.

A Letter from Mr. Peary by Eskimo Mail.— The following extract from the London *Times*, of

November 22, shows that the Eskimo mail-carrier may be trusted :

The whaler *Eclipse*, which arrived at Dundee yesterday from Davis Strait, brings a letter from Lieutenant Peary, of the American Arctic expedition. The letter, which is dated Cape York, May 29, says :

"Although it is very likely a ship will come to my headquarters this summer, I still take advantage of this opportunity of communicating with the world. I have completed a successful search for the meteoric stones mentioned by Captain John Ross in 1818, and start north to Whale Sound to-night. Hugh Lee is my companion. My party is in good condition. The long journey northward over the ice was terminated by a terrible storm, with the thermometer 50 deg. below zero, which froze a number of my dogs and temporarily disabled some of my party, necessitating my return, after penetrating into the interior 124 miles. I shall repeat the attempt next spring. If, on your arrival home next fall, no news has been received in regard to my party, please transmit this letter to the nearest United States Consul, who will cable it to New York. Yours very truly, R. E. PEARY."

The party of Eskimo who delivered the letter to the captain of the *Eclipse*, stated that Lieutenant Peary's party had suffered greatly from frost-bite, and that the long homeward journey from the interior was accomplished amid much suffering and difficulty.

IMMIGRATION INTO THE ARGENTINE REPUBLIC.—The *Anuario* of the Argentine Statistical Department for the year 1893 presents a table showing the foreign immigration for the past 37 years, exclusive of that received by way of Montevideo. The total number of immigrants was 1,407,057.

Of these 855,293 were Italians, 246,405 Spaniards, 143,678 French, 30,796 English, 24,411 Austrians, 21,864 Swiss, 21,506 Germans, 17,693 Belgians, and 45,411 not specified.

The number of arrivals for the year 1857—the first on the list—was 4,951. In 1888 the number was 130,271, and in 1889, 218,744, the highest on record. From this it sank in 1890 to 77,815, and in 1891 to 28,266. It increased in 1892 to 39,973, and in 1893 to 53,067.

The average for the 37 years is 38,028.

The population of the Republic at the end of the year 1892 was 4,257,000.

THE FORMER STUDENTS OF PROF. GUIDO CORA of Turin, celebrated his birthday, December 20, by presenting him with a memorial collection of portraits, drawings, written sentiments and autographs, contributed by his friends throughout the world, in recognition of his labours in the foundation and unaided production of his geographical journal, *Cosmos*, now 21 years of age.

For the benefit of those residing at a great distance from Turin, Prof. Paul Revelli, 12 Via Galliari, announces that contributions to the testimonial may be sent to him up to March 31, 1895.

KOLGUEV ISLAND.—Mr. Trevor-Battye, who with one companion, Thos. Hyland, visited Kolguev Island last summer to make collections in ornithology, arrived at Archangel early in November on his return, and sent an account of his experiences to the London *Times*. He landed on the northwest coast, at the mouth of the Gusina River, June 21, and set out to cross the island, over bogs and through ravines filled with snow. The weather was alternately cold and foggy, or extremely hot, when the air swarmed with mosquitoes. Birds abounded. After a week the travellers reached a camp of Samoyeds, with their reindeer, and stayed with them till August 20. During this time a Russian trader arrived, who had visited the island for 35 successive years. With this trader the Englishmen sailed for the mainland on the 18th of September, and

landed, after struggling with rough weather, at Oksina, on the Petchora River. Oksina is the centre of the Samoyed trade, and the traders send their sons into the *tundra* to be brought up as Samoyeds, a practical if not an ideal kind of education. From this place, until the Dwina was reached about 70 miles above Archangel, the journey was one continuous floundering through marshes and across half-frozen streams.

Concerning the structure of Kolguev and its climate Mr. Trevor-Battye writes :

> I was unable to find any primitive rock, either limestone or granite, or any continuity of *strata*. It is simply fluviatile deposit, and I have no doubt is part of the delta of the great palæozoic river, of which, possibly, the Petschora is a survival. Everywhere, under the action of frost, ice, water and waves, the land is being denuded, broken down and built up again. Every river but one has a bar at its mouth and is exceedingly shallow. There is a good anchorage in the big southeastern gulf, except during northeasterly winds. The Waskina River formerly entered this gulf, but does so no longer. The shore line marked on the chart does not exist. The temperature, as compared with that of the mainland, is exceedingly low. The thermometer in the sun in July only once reached 70 deg. Fahrenheit at midday. This was on July 6, and it fell to freezing point at midnight. We had constant northerly gales, one of which lasted 84 hours.

Baron von Toll's Siberian Expedition.*—In 1889 the St. Petersburg Academy of Sciences received information that the entire body of a mammoth had been discovered on the bank of the river Balakhna, near Khátanga Bay, in about 73° N. Lat.

The Academy selected Baron E. von Toll to lead an expedition to secure the mammoth, and also to explore the unknown region of the upper Khátanga River and the Anábar. The execution of the plan was delayed by the leader's serious illness, and it was not till December 25, 1892, that von Toll started from St. Peters-

* Petermanns Mitteilungen, 40 Band, 1894, VI–VII.

burg in company with Lieut. Eugene Shileiko, of the Russian Navy.

Two months later, February 23, they arrived at Yakutsk, on the Lena; and on the 9th of March they began their journey to the north. After crossing the Aldan, the most northerly considerable affluent of the Lena on the right, the travellers drove in their reindeer sleds through the picturesque Tukulan valley, where the poplar forests were unexpectedly fine, to the base of the Verkhoyansk Mountains, which they crossed by the steep Tukulan Pass, at an elevation of 4,900 feet, and descended into the valley of the Yana. At Verkhoyansk (the coldest known spot in the northern hemisphere) they turned in a north-northwesterly direction to the Bytantai River,* and thence to the north across the Omoloi Mountains into the *tundra*, at 70° 30′ N. Lat. Crossing the tundra in a direction east by north, they came again upon the Yana valley and the limit of the forest at the village of Kasatche, which Baron von Toll had visited in 1885–86 with Dr. Bunge, and where he now found two of his former guides.

Conversation with these experienced men convinced von Toll that he might extend the purpose of his journey so as to enable Lieut. Shileiko to renew and to complete the astronomical determinations and magnetic observations made by Anjou in 1821–24. After the Easter holidays von Toll set out, with Mr. Sannikov, for the place where the mammoth was said to have been found on the Sanga-ur-akh River, about 170 miles to the northeast of Kasatche. They reached the spot on

* It was on a branch of this river, the Khalbui, that a perfectly preserved carcass of a rhinoceros was found, in 1877.

the 16th of April, and began digging without loss of time, but found only some scattered bones and a shattered skull, from which the tusks had evidently been broken many years before. Sannikov, however, still hoped that, with the melting of the snow in the summer, he would succeed in finding the hoped-for prize.

Before the expedition left St. Petersburg, Baron von Toll had received a letter from Nansen asking his aid in procuring two teams of good Siberian draught-dogs. Not satisfied with what he had done to meet Nansen's wishes, von Toll conceived the idea of establishing depots on the New Siberia Islands, to meet the possible case of disaster overtaking the *Fram*. He spoke of the plan to Mr. Nicholas Kelch, of Irkutsk, who entered into it with heartiness, and furnished 1,500 rubles towards its accomplishment. All preparations having been successfully carried out, von Toll and Lieut. Shileiko, with their Cossack interpreter and three Lamuts, started in dog-sledges to cross the frozen sea to the New Siberia Islands on the 19th of April. The Lamuts, who were at home with reindeer, knew nothing about managing dogs, and there were many humorous mishaps before the party landed on Liakhov Island. Eight days later they reached the southern point of Kotelni Island, where von Toll had built a winter hut in 1886. This they found filled with snow, and the task of clearing it fell upon the three Europeans, the Lamuts being of no use for the work. Once cleared and put in order, the provisions were stored for Nansen.

One of the Lamuts was left here, and the rest of the party started around the coast for the north end of the island. At this place, Stan Durnova, 75° 37′ N. Lat.,

the other depot was made in this fashion: a deep hole was dug in the constantly-frozen soil, and the leather-covered cases of provisions were laid in it; these were covered with planks, and earth was then shovelled in; on this water was poured, to freeze, then more earth, then more water, and so on, till the hole was filled. A stout enclosure was built around it and filled with earth, and on the top of this was planted a high signal.

On the 7th of May the return began, and at Cape Chukotski a heavy snow-storm detained the party three days. When the snow ceased, the first summer visitors appeared in the silver gulls, and signs of life multiplied. On the 11th of May a pair of gray geese and the beautiful males of the king-duck (somateria spectabilis) were seen, and when the party left Kotelni on the 18th, the sweet note of the sand-piper (Tringa islandica) was audible. The birds of prey were feasting on the lemmings, the only winter inhabitants of the island, now migrating to and from the mainland, and Lieut. Shileiko shot a polar bear that had fattened on the same food.

The swift advance of summer made the crossing from the island a slow and toilsome process. The dogs gave out in the soft snow and the men had to drag the sledges; but they landed at Svatoi Noss on the 27th of May in good health. All the streams were running full with the melting snow. Here began the second part of the journey; and, mounted on reindeer, which they found waiting for them, von Toll and his companion turned their faces to the west and followed the line of the coast.

At Kasatche the caravan separated and followed two

roads to the Lena, which von Toll reached at Bulun on the 12th of July, while Lieut. Shileiko, taking a more northerly route across the Kharaulach Mountains, came on the river at Kumaksur. According to Baron von Toll, his own ride of 800 miles across the tundra was one that might be performed at any time of the year on a good reindeer, if the traveller took with him a *vetka* (the hollowed trunk of a poplar) or three boards in the shape of a trough, on which to cross the streams.

Some anomalies in climate were remarked. On the 14th of July, in 71° N. Lat., on the tundra and near the Arctic, the thermometer in the shade marked + 27° Cent. (81° Fahr.). In the sun the mercury went up to + 39° 3 C. (102° Fahr.). In three weeks thunder was heard three times, but at a great distance, and without rain; and none fell for a whole month. The swarms of gnats brought out by this dry heat terribly annoyed Lieut. Shileiko, while making his observations; and the tundra moss took fire.

At Bulun von Toll went on board the steamer *Lena*, and joined his companion at Kumaksur, where they took a boat and descended the river to the delta. The great stream flows between banks 1,000 feet in height, with stretches seven or eight miles long where no landing-place can be found in the wall of naked rock, for refuge in case of a squall. Threading their way through the mazes of the delta, the voyagers landed on the Arctic coast on the 1st of August.

The dwellers in the delta build their *yurts*, or huts, wherever they halt to hunt or to fish; so that these huts are ten times as numerous as the families they shelter.

August 3, the reindeer were mounted again for a 70-mile ride to Bolkalak on the left bank of the Olenék, not far from its mouth. While Lieut. Shileiko was busied with his observations, von Toll made excursions in the neighbourhood, and on one of these found the graves of Lieut. Prontschichev and his wife, who died near the mouth of the Olenék in 1737. The wooden enclosures were still sound, and the inscriptions on the half-broken crosses were partly legible.

From Bolkalak the journey was continued to the west by daily stages of 20 miles. The summer was far advanced, and the few birds observed were belated stragglers of the flocks that had passed to the south, and the travellers began to fear that the winter would overtake them; but from the time they reached the mouth of the Anábar, August 21, to the 22d of September, they enjoyed wonderfully soft Indian summer weather.* At the Anábar, on the 18th of September, the companions separated once more; von Toll turning back to Bulun to get together the New Siberia collections, while Shileiko remained to complete his work on the Anábar, and then to go by sled to Khatangskoi, where von Toll expected to meet him in the beginning of November.

Winter came on the 22d of September, with a heavy fall of snow, and the saddle was exchanged for the sled. On the 24th, the mouth of the Olenék was reached, and there von Toll found his Lena River boatman, Torgersen, who had spent more than a month watching for Nansen's vessel; but nothing had been seen of the *Fram*.

* Altweibersommer.

At Bulun, where he arrived October 4, von Toll remained ten days, and then started westward, travelling with great speed well into the night, thanks to the northern lights, which shone through the veil of cloud with an effect like that of the electric lamp through a white globe. It was now deep winter, with a temperature of 44 degrees below zero, Fahr., and on the watershed between the Anábar and the Popigai, altogether bare of trees, the snow storms often kept the travellers in their tents.

Lieut. Shileiko was found at Khatangskoi on the 4th of November. The country between Anábar and Khatanga, traversed and laid down in this journey, was previously unknown.

The homeward route was along the forest limit and across the last tundra, between the Piasina and the Yenisei. Yeniseisk was reached on the 22d of November, and December 27 found the explorers safe in St. Petersburg. In 367 days they had travelled 17,000 miles, of which 2,800 represent their explorations, without counting Lieut. Shileiko's 400 surveys. The route of exploration is based on 38 astronomically determined points, for which magnetic observations were also made; and the collections in geology, botany, ethnography and zoology are very rich.

The region explored lies in the East-Siberian governments of Yakutsk and Yeniseisk, in the districts of Verkhoyansk and Turukhansk, a region where the soil is constantly frozen; and through the middle flows the Lena, the grandest river of Siberia. Where this receives the Aldan, in 63° N. Lat., its right bank rests on the Verkhoyansk chain, which stretches away in

a line slightly curved like an S*, to the Arctic, sinking gradually as it approaches the sea, from 7,000 feet at the source of the Indigirka, to 5,500 where the Yana rises, and at last to 2,800 feet in the Kharaulach Mountains.

On the coast of the Arctic, between the Lena delta and Borkhaia Bay, the mountains are abrupt and steep, and from this point they continue in a northeasterly direction between 73° and 76° N. Lat., to end in the New Siberian group, where the highest peak, Malakatyn, on the Island of Kotelni, is about 1,500 feet above the sea.

The Yana, Indigirka and Kolyma rivers rise on the northern slope of the Verkhoyansk Mountains, which have throughout their extent the same geological structure.

Baron von Toll found on Liakhov Island, under what he calls the rock-ice, the bones of fossil mammals, remains of insects, leaves of the willow and the birch, and entire trees of the alder, from 14 to 20 feet long, with their leaves and cones; and he comes to the conclusion that the mammoth and its congeners were native to the region, and also, that the forest-limit formerly extended to 74° N. Lat., at least three degrees further north than its present line.

The mechanical action of the streams in this region is in a horizontal direction on the surface, owing to the impenetrability of the frozen soil, and not vertical, as in the case of the European rivers; and this fact has

* The text reads oddly enough: lehnt sich . . . . an das Werchojansker Kettengebirge, das, leicht S-förmig gekrümmt, fast in meridionaler Richtung bis an das Eismeer hinanreicht.

its relation to the organic life. The Lamuts assert that the migration of the lemmings takes place every three years; and von Toll finds the following explanation of the phenomenon. All the higher spots of the tundra are honey-combed with a net-work of underground passages, dug by the lemmings to protect them against their numerous enemies. The storms of winter fill these passages with snow, and when the snow melts the surface is broken up so that the ground looks like a freshly-ploughed field. This ruins the vegetation, and the lemmings wander away to new pastures. The period of three years represents the time required for the complete destruction of the vegetation, or for its renewal.

The migration of the wild reindeer is not less interesting. Every year these animals move to the coast in the summer, some of them even crossing to the New Siberian Islands. The hunters lie in wait for them all along the coast, and kill them in the water with spears. In the autumn the reindeer turn back from the Khátanga Gulf and fall into the snares set for them, to the great profit of their human enemies, who are cared for by Nature in a peculiar way, if Baron von Toll is right. As he explains it, the reindeer are driven to migrate by the persecution they suffer from the gnats and gad-flies, and these apparently useless plagues may be rightly regarded as a necessary factor in the economy of Nature.*

Lieut. Shileiko, perhaps, and the reindeer may not see the necessity of the factor.

* Und man kann daher mit Recht diese scheinbar nutzlosen Plagegeister als einen notwendigen Faktor im Haushalte der Natur ansehen.

Very impressive is the coming of the birds in the death-like stillness of the tundra. They come all at once, with the warm weather, by millions, and the air resounds night and day with the concert of their voices. Yet a few weeks, and the concert is hushed as suddenly as it began. The myriads are busied with the one care of protecting their young from the enemies about them; and only now and then is heard the warning cry of the old bird on the watch.

Migration is the law of life in these regions. All the inhabitants, Yakuts, Tunguses, Lamuts, and even the Russians, are nomads. They move with their reindeer to the sea-shore, and back to the protection afforded by the forest in the winter. Only the Yakuts in the Lena delta remain in the tundra throughout the year.

The Russian settlements are left empty in the time of the summer fishery; and the travelling merchants from Yakutsk come down in September to barter, some with the western, some with the eastern tribes, returning in the spring to embark with their families and all their wealth in furs and mammoth ivory for the voyage of long months on the Lena, back to the Yakutsk for the yearly fair.

Baron von Toll has none but good words for the native Siberians, an honest, simple, kindly race, to be regarded with the affection that men bestow upon children. Like children, also, they have great qualities to be developed; and the famous saying of the Highlanders finds a parallel in this of the Yakuts: "Shoulder to shoulder, to stand and to die for a cause."

KAFIRISTAN.—Mr. G. S. Robertson, C.S.I., who tells his story in the *Geographical Journal* for September,

1894, is the only European who has travelled in Kafiristan. Lockhart's mission, in September, 1885, crossed from Chitral into the Bashgul valley, stayed a few days, and returned to Chitral by another road. McNair, it seems, never entered the real Kafir country.

Mr. Robertson made his first visit in October, 1889, and he spent more than a year in the country.

Kafiristan, the *land of the Infidel*, is a geographical expression used to designate the region inhabited by non-Mohammedan tribes. It is bounded, according to Mr. Robertson, on the east by Chitral and the Kunar valley, on the southeast by the Kunar valley, on the west by Afghanistan, and on the north by the Hindu Kush and by the Badakhshan.

The country consists of a series of main valleys, deep, narrow and tortuous, into which narrower and more difficult valleys and ravines pour their torrent waters. The main valleys are separated from each other by high and rugged hills, and the different tribes are consequently isolated during the winter. The passes leading from Badakhshan are over 15,000 feet in height, and those on the Chitral side, though somewhat lower, are still effectually closed by the snow.

On the lower slopes fruit trees abound, with many shade trees, horse-chestnuts, oaks, wild olives and shrubs of all kinds; while at an elevation of from 5,000 to 9,000 feet there are dense pine and cedar forests. Beyond these grow willows, birches and juniper trees, and above 13,000 feet the only vegetation is rough grasses and mosses.

All the rivers drain into the Kabul, either directly or through the Kunar River; and the roads, such as they

are, lie along the river banks, where the traveller has frequently to edge himself on in a sitting posture.

The bridges, sometimes very well built, are high above the water and often not more than eighteen or twenty inches wide in the middle, with parapets a few inches high ; and sometimes they consist of nothing more than a pole or two. In the Presun Valley, however, they are made on the principle of the dug-out boat from large tree-trunks, and are easy and safe.

Mr. Robertson thinks that the people of this strange country are mainly descended from the old Indian population of Eastern Afghanistan, mingled with the aboriginal races of the valleys.

He finds three distinct languages in Kafiristan, besides many dialects.

The tongue spoken by the greatest number is that of the Siah-Posh ; the other two being the Wai, and the speech of the Presun people, which, the Bashgul Kafirs declared, could never be learned by any one. The sound of this Oriental Basque is compared by Mr. Robertson to a soft musical mewing.

The tribe is split up into families or clans, and affairs are arranged by consultation of the headmen, or *jasts*.

The *jast* is appointed after a ceremony, which lasts for more than two years, and must be performed again and again, if the headman wishes to keep his influence.

Physically, the Kafirs are lightly built, vigorous men, who seem to be in hard training. Fat men are unknown. In talking with a priest, Mr. Robertson explained how common corpulence was in England. "I know very well what you mean," said the priest ; "I

once killed a very fine man on the Asmar frontier, and he was fat just as you describe."

The average height of the men is five and a half feet. The women are of low stature and weakly in appearance, but of wonderful endurance.

The people are extremely jealous and covetous, and they keep up the bitterest intertribal hatreds. Their mental powers are considerable. Mr. Robertson took with him to India a boy of a somewhat degraded type, and paid him 280 Indian rupees for his services. The boy asked to have the equivalent in Kabul rupees; the rupee of India representing sixteen, and that of Kabul twelve and a half annas. Mr. Robertson figured out the sum, but the boy proved that the calculation was wrong, counting by his fingers and toes.

On another occasion Mr. Robertson had forgotten the arrangement of letters by which he opened a puzzle lock. He showed the lock to a Kafir, who had never before seen a printed letter. The man found the combination and never forgot it.

The Kafir religion is idolatry, with traces of ancestor-worship. Imra is the creator of all things; and there are many secondary deities, the most popular being Gish, the war-god, who was miraculously created. He is said to have killed Hasan and Husein, the grandsons of Mohammed. Gish has shrines in every village; his image being either a plain stone, or a wooden head and face, and war-trophies are frequently set on poles at the corners of his temples.

The Kafirs believe also in fairies and in devils; and in a hell under ground where wicked people burn. The spirit of a dead man becomes a shade, or phantom.

The most sacred place in the world is Kashmir, because it was the first created country, and from it the world was populated by a dispersion like that which followed upon the building of the tower of Babel.

A number of the children of Father Adam and his wife were asleep together; and when they waked in the morning a confusion of tongues had come upon them, so that each man could understand only one particular woman, and the couples wandered away in different directions.

Though the Kafirs do not admit that they worship their ancestors, the wooden or stone erections to the memory of the dead are often sprinkled with the blood of sacrifices. All the worship is by sacrifices, dances or sacred songs; and there is nothing like prayer.

The dead are neither buried nor burned. The bodies are placed in large boxes on the hillside, or in some secluded spot; and in some cases close to the village and by the roadside. The boxes are very large and are used till they are filled, or as long as they hold together. Only in rare instances is there much ceremonial about the funeral. Two young men were killed in an expedition. Their heads were brought to their village by a friendly tribe and were received by a crowd of mourning women, and at the same time the fathers of the boys threw themselves from the housetop. Straw figures were attached to the heads, and they were then taken to the dancing-platform, where orations, dances and mourning went on for two or three days, while food and wine were distributed to the company. Then the heads were taken to the cemetery, and the observances went on with the straw figures.

There are no blood-feuds, but if a Kafir kill one of his tribe he must leave his village and become an outcast. His house is burned and his property is plundered; and his descendants must bear the stigma of his crime. The slayer flees to one of the recognized cities of refuge and remains there.

Marriage customs are simple. A man who wishes to marry sends a friend to ask the price of the bride. If he is poor, he is asked to pay eight cows; if rich, as many as twelve or sixteen. If the father accepts the price, the man goes to the woman's home, where a goat is sacrificed, and the ceremony is over; but the woman remains in her father's house till the price is paid.

Polygamy prevails; and after a man's death his wives may be sold or retained by his brothers.

Mr. Robertson praises the courage and independent spirit of the Kafirs, as well as their strong family affection, and their devotion to one another in war. They are boastful and splendidly mendacious, yet far more truthful and honourable than their immediate neighbours. This is bad for the neighbours; and the whole story becomes a dark saying when Mr. Robertson adds:

> Most of the early information given me was false from beginning to end, and I still grudge the labour involved in recording it.

L'Afrique Explorée et Civilisée.—Messrs. Georg et Cie., Geneva, the publishers of this excellent periodical, announce its cessation with the number for August, 1894; the impaired health of the editor, Mr. Charles Faure, no longer permitting him to continue the work so ably and so conscientiously performed, from month to month, for the past fifteen years.

M. Faure, it should be said in bidding him farewell, was always true to principle. He sympathized with the daring and the energy of the Europeans, but he never forgot that the Africans had rights, nor failed to expose and to denounce the wrong done in the sacred name of civilization.

THREE YEARS IN MOROCCO.—M. Gabriel Delbrel left France for Algeria, in the autumn of 1890, to fit himself by the study of Arabic for a journey into Morocco. He was then 18 years of age. At Tlemcen he made the acquaintance of a prominent trader, who gave him letters of recommendation to the chiefs of the Angad tribes on the frontier of Morocco.

Wearing the Arab dress, but not concealing his nationality, he was well received at Udjda, and visited the region of the Chotts, or salt lakes, and the Dahra. Falling under suspicion in one place, he assumed the character of a Turk, and was careful thereafter to observe the practices of the Mohammedan religion. Detained for several months among the Angad by intertribal quarrels, he set out in November, 1891, with the kaïd Hameda-el-Buzegawi for the City of Fez. There he found his way, in the train of the kaïd, into the presence of the Sultan. On his way back to Algeria he fell sick and was arrested by one of the sons of the Sultan. He succeeded in escaping to the Beni-M'ter, Berbers dwelling between Fez and the chain of the Middle Atlas. These Berbers were ordered to join the Sultan's force moving against Tafilelt, and Delbrel accompanied his protectors.

He was denounced and brought before the Sultan,

but was spared at the intercession of Muley-Abdul-Aziz, who is now the ruler of Morocco.

Delbrel acquired the friendship of the young prince, to whom he gave lessons in drawing, and was allowed to move about the country without being greatly annoyed. His stay in the Tafilelt was from the 10th to the 19th of November, 1893. As a captive under surveillance, he followed the Sultan's army to the City of Morocco, and there determined to make his escape. He started in the night of December 31, and after a forced march of 2½ days reached Mazagan, where he took refuge with the French consul. There was no time to lose. The Sultan had sent out horsemen in pursuit of the fugitive, and the day after his arrival agents were searching the town for him. Men were posted at the gate leading to the water-side to intercept Delbrel on his way to the steamer; but he had changed his Arab costume for a European dress and embarked in safety on the 8th of January. On the 16th he reached Marseilles.

M. Delbrel was not a trained explorer. His instruments were a compass and a chronometer, and his ready pencil; and with these he made the best possible use of his opportunities, as appears from the map of his route, the plan of Tafilelt and the sketches, which accompany the text of his *Notes* in the *Bulletin* of the Paris Geographical Society, for the second Quarter of 1894. He is one of the three Europeans who have seen the oasis of Tafilelt. René Caillié passed a few days in the place in 1828; and in 1862 Gerhard Rolfs resided there for a month, and his account is still the

principal source of information.* Tafilelt is the cradle of the dynasty that reigns in Morocco, and the place of exile for the members of the imperial family. It is situated in 31° N. Lat., and between 4° and 5° W. Long. M. Delbrel determined its altitude at 600 metres (1,968 feet), with the help of a barometer belonging to an officer in the service of the Sultan.

Tafilelt is an unhealthy place on account of the great difference between the temperature of the day and that of the night. In November, 1893, the temperature at noon, in the shade, was from 35° to 40° Cent. (95° to 104° Fahr.), and it sank, between midnight and 2 A.M., to 1° Cent. (30° Fahr.). The supply of water is scanty and most of the wells are brackish. Some few of the *Ksur*, or fortified villages, possess wells of sweet water.

There are no roads but the footpaths, and these are difficult and perilous in the mountains.

The population numbers about 45,000, composed of the Cheurfa Moulaï-Ali, or imperial exiles, the Filâla, who form the majority, the husbandmen and the Arab traders, and the Jews, who number 300 or 400 and live in a special village.

The Cheurfa are the nobles of the oasis. They receive an annual pension from the Sultan, and pass their time in fighting each other.

The Filala hunt and till the ground. They are generally tall and thin, very hardy and active. One, whom M. Delbrel saw at Fez in 1892, travelled as a

* To these names must now be added that of Mr. Walter B. Harris, who started from Morocco on the 1st November, 1893, and visited Tafilelt not long after M. Delbrel. He described his journey at a meeting of the Royal Geographical Society in November, 1894.

courier from Fez to Udjda in four days, a journey of five days for men on horseback.

Like the Cheurfa, they are continually quarrelling among themselves. They are fanatical and detest the Christians; and their violent temper seems to be due in some degree to the hemp, which they smoke to excess. They plant chiefly hemp and maize, with squashes, melons and sweet potatoes; and of fruit-trees they have the fig, the apricot, orange, lemon and apple; but their great reliance is on the date-palm, of which there are several varieties. All the available soil is cultivated, but the crops are frequently ruined by drought, or by the locusts.

M. Delbrel noticed that the Filala women, except those of the richer class, went with uncovered faces, contrary to the Mussulman custom. They are good-looking and well made, but they lead a hard life. Marriage is an affair of bargain, and the price of a wife is generally 200 francs paid to the father; though the priest, in the presence of both families, goes through the form of asking the bride, who is with the other women behind a screen, whether she is willing to be the wife of the man who has bought her. The marriage takes place a week after the betrothal, and is celebrated with a *fantasia* and a procession to the home of the new couple.

The leather manufactured in the Tafilelt is a very fine morocco. Besides this, the people make excellent pottery, flint-lock muskets, daggers, saddles, embroidered bags, etc., and very fine basket-work. There is an active trade in all these articles and in the exchange of European products for those of the Sudan; and the place is a great slave-market.

The ordinary dwellings are not much more than huts, built of sun-dried earth, but the *Ksur*, though made of the same material, with the addition of lime, are often imposing structures, with walls six or seven feet thick and thirty-five or forty feet in height, enclosing in an area of a square mile, or more, the residences of forty or fifty families.

The successful issue of a journey so prolonged through regions full of danger bears testimony to M. Delbrel's remarkable intelligence, courage and self-command.

AN ESCAPE FROM THE SUDAN.—Father Paolo Rossignoli, of the Austrian mission at El Obeid, in Kordofan, reached Cairo on the 25th of November, with the guide Abdullah Omar, to whom he owes his escape from Omdurman.

Father Rossignoli was captured with the other members of the mission in 1883. In March last Abdullah Omar signed an agreement with Maj. F. R. Wingate that, for the sum of £300, he would secure the escape of a European prisoner from the power of the Khalifa. He left Cairo March 31, taking with him a visiting card on which Archbishop Sogaro had written in Latin: *To Father Rossignoli.—The time of your deliverance has arrived. Trust in God. Come.*

On the 30th of June Abdullah arrived at Berber, where he was arrested as an Egyptian spy; but he disarmed suspicion by contracting a marriage and settling in the place. After two months he proceeded to Omdurman, where he found Father Rossignoli living

as a servant in a coffee-shop, and communicated with him.

A boatman was engaged to take Father Rossignoli to Berber, in the character of an Egyptian soldier escaping from his creditors; but the other passengers recognized the priest and refused to go with him. Abdullah then bought a camel and two donkeys, and Father Rossignoli, feigning illness, started for Khartum, and hid himself in a ruin near the Nile.

He was joined by Abdallah and they got as far as Metammeh, where they were seized by fifteen soldiers of the Berber garrison; but Abdullah's ready wit saved them. He professed to belong to the Emir of Berber's party.

At Berber, Abdullah was denounced for travelling with a Christian and was brought before the Emir, while search was made for the priest, who succeeded in hiding himself, till Abdullah got free by bribing the Emir. Here the fugitives crossed the Nile, on the 9th of November, and travelled night and day till they reached Assuan, where they were safe, on the 20th; the emissaries sent in pursuit of them having lost the trail and taken the road to Kassala, now held by the Italians, and assumed therefore to be the priest's destination.

Father Rossignoli reports that the Mahdist movement has been greatly weakened by the Italian capture of Kassala, and that the tyranny of the Khalifa has made him very unpopular. None the less, he keeps up the garrisons at El Obeid, Dongola and other places, and he has gathered a force to recover Kassala. There will be three armies; one under Osman Digna will

move from Gos Redjib, which is northwest of Kassala ; the other two from El Fasher and Geddaref, both lying to the southwest. The total Dervish force is estimated at 15,000 men.

Dr. Donaldson Smith, of Philadelphia, who left Berbera with a caravan last summer for Lake Rudolf, was heard from in November. He reached early in September a point in 7° 11′ N. Lat. and 42° 11′ E. Long., almost half-way to the lake. He made a running survey of the unmapped country through which he passed, and followed for a week the course of a great river, which he believes to be the Erer and an affluent of, or identical with, the Webi Shebeli.

At the end of the week, being still unable to cross the river, he retraced his steps and at last discovered a ford, which was crossed with difficulty.

The country was thinly populated, partly through the wars between the Gallas and the Ogadins, but partly, no doubt, because the tribes are nomadic in their habits.

Dr. Smith's party was in good health, and he had made large collections in natural history.

German East Africa.—Letters from Count von Götzen, printed in the *Verhandlungen** of the Berlin Geographical Society, record some interesting discoveries in German East Africa.

In the volcanic region of the Gurui Mountain, midway between Bagamoyo and the Victoria Nyanza, von Götzen climbed through primeval forest to the principal ridge of one mountain. This ridge, between 2

* Band XXI, No. 6 and No. 8.

and 3 miles long and 2 to 2½ in width, rose to a height of 9,500 feet, with a peak at least 1,000 feet higher. Thick reed-grass and heath covered the sides, and among these grew Alpine violets, forget-me-nots and rhododendrons; and there were many tracks of rhinoceroses and elephants.

The ravines were very steep. Looking to the southwest von Götzen saw a great lake, to which one of his men, who had travelled with Stuhlmann, gave the name of the Umburre Lake. It lies to the northeastward of Stuhlmann's route to Irangi; and von Götzen was assured that it never dried up, and that the people on its shores navigated it in boats. It was said to swarm with hippopotami; and near it was a country called Niarasa Land.

On the 3d of February, 1894, while on the upper course of the Bubu River, on the Uasi Mountains, to the north of Irangi, an uncommonly severe earthquake was felt. It lasted about 20 seconds, and the direction was S.S.W. to N.N.E.

At the beginning of May the explorer crossed the Kagera-Nile, about where Stanley places his Mt. Observation in the map of *In Darkest Africa*, and marched to the Virunga Mountains. The native names of the cones, taken in succession from east to west, are: Ufúmbiro, Vihunga, Karisimbi, Navúnge and Kirunga tsha gongo (place of sacrifice), which was evidently an active volcano. To reach this it was necessary to cross at two points the Niavarongo, the largest source of the Kagera. It rises on the eastern edge of the Central-African trough, makes a great bend almost to the Virunga volcano, and unites with a

smaller river, the Akenyara. Von Götzen approached the Kirunga tsha gongo from the south and climbed to the top, after toiling through the woods for three days.

The edge of the principal crater, which is of imposing character, is at an elevation of 11,220 feet. Standing on the brink, one looks across an amphitheatre of a mile in diameter, with walls sloping at an angle of eighty degrees, 1,000 feet down to the level floor, yellowish-brown in colour. In the floor are two shafts, as regular as if shaped by the hand of man, and from that to the north, the diameter of which may be from 300 to 500 feet, pours forth vapour, red with reflected light, and accompanied at irregular intervals by a sound like thunder. These are signs of the lava below; and von Götzen concluded from the glimmer visible on the western edge of the mountain that another centre of eruption existed in that direction; but he was unable to reach the place through the dense forest.

Near the foot of the Kirunga tsha gongo lies Lake Kivu, from which the Rusisi River flows into Tanganika. Kivu is at an elevation of 4,920 feet. It is not much smaller than Lake Albert Edward; von Götzen encamped at its northern extremity and it looked like the sea.

Though the weather was clear, nothing could be seen of the southern or the western shore, and strong breakers rolled against the lava-cliffs.

The western side is subject to the King of Ruanda, and his elephant-hunters, the Batura, are well-grown people, without a dwarf among them. In East-Ruanda the explorer passed another lake, called Mohasi, be-

tween 35 and 50 miles in length, and from a mile and a quarter to three miles wide.

The northern extremity of this lake occupies the spot where Kisege stands in Stuhlmann's ethnographic map, published in October, 1893 ; and the extension of the lake is towards the south-east.

Count von Götzen's second letter, written from the Kivu Lake on the 18th of June last, closes with the remark that Lakes Oso and Kivu may very well form one body of water. Since that time he has pushed his exploration, as appears by the following telegram from Matadi, on the lower Congo, received by the Berlin Geographical Society on the 8th of December :

I reached Matadi *via* Ruanda through the primeval forest and along the Lowa. Volcano in action. Kivu large. Oso River.

The supposed lake proves to be a river, and this makes a record of three important discoveries for this latest march across Africa.

Exploration on the Congo.—Mr. Mohun, U. S. Consul in the Congo State, reported in the *Mouvement Géographique*, of Sept. 30, the results of his exploration of the River Congo from Kasongo to the confluence with the Lukuga.

This length of about 80 miles was previously unknown. It proved to be an almost unbroken succession of rapids, as far as Kongola, two days' navigation below the mouth of the Lukuga. In the Mesi rapid one of the boats capsized and six men were drowned. The width of the river varies greatly, from 2,500 metres (1½ miles) between Mutabelli and Sanga, to 90 metres (320 feet) between Kongola and Lenga. This gorge is very

picturesque, and at one point (lat. 5° 8′), to which Mr. Mohun gave the name of Hell Gate, the stream, 600 feet wide, rushes between a hill 400 feet high on the right and a black granite cliff on the left, while two quartz monoliths, nearly 100 feet in height, divide the roaring waters into three channels. From the mouth of the Luama to Kongola the river valley is narrow and shut in, on the east and the west, by hills that rise here and there to the dignity of mountains. To one of these, on the east, 3,100 feet in height, Mr. Mohun gave the name of Mt. Dhanis, in honour of the commander of the Manyema expedition, and to another, 4,350 feet high, on the left bank, that of Mt. Cleveland, in honour of President Cleveland.

Above Kongola the valley widens, the rapids cease, and the river broadens into two lagoons or pools which are, perhaps, the Lake Langi of the Arabs, though Mr. Mohun nowhere met with this name.

The river is very low in January and February. It begins to rise in March, and at Hell Gate, in the four weeks from March 18 to April 15, the waters rose $4^{\cdot 50}$ metres (14 feet, 9 inches).

The soil of the valley is extremely rich, and well cultivated by a dense population, belonging to the Barua.

Exploration in the Niam-Niam Country.—M. de la Kéthulle de Ryhove, a Belgian officer in the service of the Congo State, returned to Brussels in November last from a sojourn of more than three years in the Niam-Niam country, between the Welle River and the frontier of Darfur.

From Yakoma he ascended the Mbomu River to its

confluence with the Shinko at Sandu, where he received a visit from the King Rafay, one of the two most powerful chiefs of the Niam-Niam, the other being Semio.

Rafay formerly served under the orders of Lupton Bey, Egyptian governor of the Bahr-el-Ghazal province, and is now about 35 years of age. He has a strong force of soldiers armed with modern improved muskets, captured from the Mahdists. He received M. de la Kéthulle with cordiality, and placed his country under the protection of the Congo State; and he accompanied the Belgian officer in an exploration of the Shinko River as far as 6° 30′ N. Lat., where a military post was established at Sango.

Returning to the point of departure, M. de la Kéthulle then started to explore and take possession of the country to the north-west, and north. He reached the territory of the Kreishe, a tribe previously unknown, made treaties with their chiefs and founded a post at Bandassi, on the Kpakpe River (the upper course of the Shinko) in N. Lat. 7° 20′. He then crossed the water-shed between the basins of the Congo and the Nile, explored the source of the Ada (the upper stream of the Bahr-el-Arab), established a post upon it in Lat. 8° 40′, and sent a company of soldiers to occupy, to the north, the important mining centre of Hofrah-en-Nahas (the copper town).

He was now 400 miles north of the Welle River, in a region to which but one European had penetrated before him.* The Arabs of Wadai offered to escort him

* Dr. Potagos, the Greek traveller, who crossed the Ada near its source, in 1876, and pushed to a spot designated as Zeriba Nur, in the Shari basin, E. Long. 23° 10′, N. Lat. 9° 20′.

and his force to Lake Tchad, and friendly messages were sent to him by the Sultan of Darfur; but he decided to turn back, having almost reached the northern boundary of the Congo State as laid down in the convention with Great Britain, and since abandoned.

WASHINGTON LETTER.

WASHINGTON, December 29, 1894.

NEW GEOGRAPHY.—Outside of parties immediately interested in the sealing industry, the Commander Islands, off Kamchatka, are almost unknown. Commander Z. L. Tanner in his Report upon the investigations of the steamer *Albatross* in 1892 (just published) makes some interesting statements based on personal observations.

The group consists of two principal islands, Bering and Copper, with numerous outlying rocks and islets. Both islands (50 and 30 miles respectively) have a central mountain range upwards of 2,000 feet in height. The islands lie northwest and southeast; have a breadth of from 2 to 17 miles, and a climate not severe, on account of the benign influence of the Japan stream. Nutritive grasses grow on Bering Island, and the natives cultivate hardy vegetables. The population of both islands is less than 700 and is concentrated at two points,—Nikolski and Preobrajenski. They are housed in comfortable wooden cottages, and have a Greek church. The government is vested in a Governor appointed by the Russian authorities. A native chief and second chief are elected by vote, subject to the governor and agent. Every member of the community has certain duties to perform, and the pay for all work is turned into a common fund which is divided *per capita*, a certain amount being withheld for the support

of the church. Transportation is by dog sleds, which in winter can easily travel 25 miles a day. Reindeer from Siberia have been turned loose on the islands; besides which the natives have small herds of cattle.

Captain Tanner touched also at the volcanic Bogoslof Island, and noted many changes since the visit of one year previous. New Bogoslof was still active, but was at least 100 feet lower and otherwise changed in outline. The old and new volcanoes, about a mile apart, were connected a year ago by a narrow isthmus a little above the level of the sea. Now there is an open passage several hundred feet in width; the remainder of the spit having been bodily moved to the westward with a broad sweep.

The scientific investigations of this cruise of the *Albatross* were confined largely to collecting information pertaining to the natural history of the fur seal, yet by taking advantage of the occasional days when the regular work could not be carried on, the naturalists on board were able to make considerable collections.

Geographic Distribution of Animals and Plants.—Dr. C. Hart Merriam has been for several years engaged in an investigation of the laws of thermal control that regulate the distribution of animals and plants. Since the enlargement of the scope of the investigation authorized by Congress in 1890, the work has been pressed with increased vigor and on a scale never before attempted. The aim from the first has been to obtain accurate and complete data for mapping the distribution of individual species, and by combining these maps, and by independent field work, to ascertain the bound-

aries of the natural life zones of the country, at the same time securing data and specimens illustrating the distribution and status of the various species. An area of about 12,000 square miles in northern Arizona was mapped in 1889; about 20,000 square miles in Idaho in 1890; in 1891 the Death Valley expedition was engaged in similar work and covered about 100,000 square miles between the Colorado River and the Pacific Ocean. Since then the biological survey of the Rocky Mountain region has been carried from Utah and Idaho completely across Wyoming. A large part of Wyoming was found to be from 1,000 to 3,000 feet lower than represented on the latest maps, and consequently to have a warmer summer climate and to belong to a more southern life zone than previously supposed. The regions thus investigated include the highest and lowest portions of the United States, namely, Mount Whitney, in the Sierras, some 15,000 feet above sea-level, and Death Valley, 500 feet below sea-level.

Dr. Merriam was the first to point out that the territory of the United States may be divided into a definite number of belts or zones, each characterized by the presence of certain native animals and plants, and which under cultivation is fitted for particular agricultural products. The reason, says Dr. Merriam,* why certain animals and plants are restricted to particular areas or belts, where no visible barriers exist to prevent dispersion, is that the sensitive organizations of such species have become adapted to the particular physical and climatic conditions there prevalent, and are not sufficiently plastic to enable them to live under other

* Annual Report of the Secretary of Agriculture, 1893, p. 228.

conditions. What is true of animals and plants in a state of nature is true also of animals and plants as modified by man ; for every race or breed of sheep, cattle or swine, and every variety of grain, vegetable or fruit, thrives best under particular conditions of temperature, moisture and exposure.

When the courses of these bio-geographic zones are traced across the continent, and their boundaries shown in different colors on large scale maps, the agriculturist will have a key to the crops most likely to succeed in his location, for the fauna and flora of a region may be made to serve as a reliable index to its agricultural capabilities. In the late annual report of the Secretary of Agriculture Dr. Merriam has delineated a colored map which he terms "Third provisional bio-geographic map of North America, showing the principal life areas."

Results of Primary Triangulations.—Mr. Henry Gannett has in form for publication the results of primary triangulation executed by the Geological Survey since the commencement of work upon the topographic atlas of the United States. He says that the triangulation of the survey is executed solely for the primary control of topographic work upon scales not exceeding 1 :62,500, or very nearly one mile to an inch. Wherever work has been done by other organizations, which is of sufficient accuracy for the control of the maps of the Geological Survey, such work has been utilized both immediately for the location of topographic work and also for the extension of triangulation therefrom by the Survey. For instance, the maps in New England, New

York, New Jersey and Pennsylvania rest in large part directly upon the points determined by the Coast and Geodetic Survey, while in the Appalachian region triangulation has been *extended* by the Geological Survey from points determined by the Coast Survey. The work of the U. S. Lake Survey, and also that of the New York State Survey has been extensively utilized in a similar manner.

The results of these triangulations have been arranged in chapters by geographical groups, the arrangement being as natural as possible. These groups are as follows: New England; New York, New Jersey and Pennsylvania; South Appalachian region; Michigan; Arkansas; Kansas; Texas; Black Hills of South Dakota; Aspen, Colo.; Wyoming; Montana; Idaho; California; and the plateau region of New Mexico and Arizona. Confining further remarks to triangulation in New England, New York, New Jersey and Pennsylvania, it may be said that the Coast and Geodetic Survey covers the entire coast of Maine, and extends far inland. It covers most of New Hampshire and much of Vermont. The entire areas of the remaining States of this group are practically covered by its primary stations, but much work of a supplementary character was found necessary by the Geological Survey. In New York the Coast Survey triangulation extends from New York Harbor up the Hudson and through Lake Champlain, and up the Mohawk Valley to a connection with the U. S. Lake Survey near Oswego. The New York State (Gardner) Survey, starting from points near the Hudson, has been extended westward to the foot of Lake Erie, and southward across the middle of the State to

the Pennsylvania line. The work of the Coast Survey extends over a large part of Eastern Pennsylvania, while the entire area of New Jersey has been closely covered by the Coast Survey and New Jersey Geological Survey triangulations. Both in New York and Pennsylvania much supplementary triangulation was found necessary, both for the purpose of supplying more points in areas already covered by triangulation and in the extension into new areas.

It is worth remarking in passing that of the triangulation executed by early surveys in the West, known as the Hayden, Powell and Wheeler surveys, the Wheeler work has been utilized but little, the Hayden to a greater extent, the Powell survey very largely.

Triangulation being an absolute requisite, or basis of every extensive topographic survey, this work of Mr. Gannett's asserts its usefulness in the projection of great railroad lines, systems of irrigation, water works, etc.

Mr. Gannett's Manual of Topographic Methods, published a few months ago, has been in greater demand than any other publication of the Geological Survey. The entire edition is nearly exhausted—a very large proportion of it by sale.

The Legislature of New York having failed at its last session to make provision to continue the topographic survey of the State in conjunction with the U. S. Geological Survey, but little has been accomplished there during 1894. With a small balance of appropriation from 1893 five additional sheets of maps have been issued. Twenty-five sheets were issued the previous year. An appropriation for the "Colvin"

survey was vetoed by Gov. Flower, and perhaps wisely. If the State of New York is to continue and complete the topographic survey and map of the State in conjunction with the U. S. Survey, as has been done with so much credit by Massachusetts, Connecticut and New Jersey, it is at least proper that all disjointed efforts should be discouraged, and the opportunity should not be slighted of having the entire work done in the most thorough manner, and at greatly reduced expense.

Bureau of American Republics. — It has been assumed that the omission in the estimates of the Department of State of the annual appropriation for the Bureau of American Republics was an unfriendly act of the Department, or an indication on the part of this Administration to permit the Bureau to drop out of existence. But while Congress at the last session reduced the appropriation to the Bureau to a point that crippled its usefulness, such an assumption overlooks the fact that the Bureau was created under an international agreement with the Republics of South America, to last until the year 1900. The Comptroller of the Treasury recently affirmed the international character of the Bureau, thus giving it a broader foundation, and determining the fact that it is not a branch of the Department of State, but a separate Bureau under the supervision of the Secretary of State, and hence it was not thought proper to include it in the regular department estimates. Senator Hale has introduced a bill providing for an appropriation of $30,000 per annum.

Last summer, when the director found himself in-

vested with very small means to carry on the operations of his Bureau, he conceived the wise plan of inviting advertisements for insertion in the various publications of the Bureau, which have wide circulation among business houses in both Americas. The plan was being worked very successfully, when the Secretary of State interposed, and all contracts were cancelled forthwith. Since then the operations of the Bureau have been quite at a standstill. One scarcely perceives the difference between selling the publications of the Bureau and selling advertising spaces in its publications. The "press" all over the country jeered and howled, because one branch of the Government proposed to do business precisely as a well-conducted business house would. Every line of the *U. S. Official Postal Guide* is furnished by the Post Office Department, and the Postmaster-General certifies on the outside cover that the *Guide* is "the only Official Bulletin of the Post Office Department," and yet this official publication is sandwiched between 150 pages of profitable advertisements.

The Secretary of State has concluded, however, that while the international agreement with the republics of South America has not the binding force of a treaty made by the President, by and with the advice and consent of the Senate, it has the sanction of the President and of both Houses of Congress, and that as long as a majority of the Governments that became parties to the Union, at the instance of the United States, adhere to it by contributing to its support, this Government cannot in good faith withdraw from the organization.

WESTERN SIBERIA.—Consul-General Charles Jonas, in the December issue of the U. S. Consular Reports, makes some interesting statements regarding the recent rapid development of the vast region called Western Siberia. Although this region forms less than one-fifth of all Siberia, it contains fully two-thirds of its inhabitants, but so thinly populated as to contain on an average only three persons to the square mile. It is estimated that over 18,000 emigrants settled in Western Siberia last summer. The western section of the Siberian Railroad, a distance of about 500 miles, has just been finished. The passenger service is exceedingly limited, trains being dispatched from Omsk twice a week. The distance between stations is 26 miles, and the fare about 24 cents between two stations. The fare from Cheliabinsk to Omsk—495 miles—is $5.40, but the running time of the whole line is two days and four hours. With the completion of this western section there is now an unbroken line of railroad from St. Petersburg to Omsk, a distance of 2,128 miles, which may be travelled in four and a half days. Though the track crosses the Ural Mountains, the whole mountain section of 200 miles has been constructed without tunnels, and, *mirabile dictu*, at a cost of about $7,000 less per mile than the estimates. An effort will be made next year to extend the track as far as Krasnoyarsk, on the Upper Yenisei, 3,528 miles from St. Petersburg, exceeding about 300 miles the shortest railroad track from New York to San Francisco.

This great railway development through a region of

cheap and fertile land, and cheap farm labor, will affect the markets of the world in the near future.

WASHINGTON'S CONVENTION WEEK.—The American Jewish Historical Society—an organization running on lines parallel with those of the Anglo-Jewish Society—commenced its third annual meeting in this city December 26th. The membership of this Society is mostly in Philadelphia, New York and the Southern States. Among those present were: Oscar S. Straus, Prof. Richard Gottheil, Rev. Dr. G. Gottheil and Mr. Barnet Phillips, of New York; Dr. Herbert Friedenwald and Henry S. Marias, of Philadelphia; Dr. Cyrus Adler, of Washington; Mendes Cohen and Meyer Cohen, of Baltimore, and Prof. M. Jastrow.

The object of the Society is to collect and publish material bearing upon the history of the Jews in America. It is not sectarian, but merely specializes a section of American history. The Jews in Spain and Portugal participated in some degree in the voyages which led to the discovery of America, and there were Jews from Holland, Great Britain and Jamaica among the earliest settlers. There were Jews in the Continental Army, and others contributed liberally to defray the expenses of the Revolutionary War.

The following named interesting papers, among others, were submitted for publication:

"Addresses of the Jews of the United States to Washington and his Replies Thereto," and "The Statue of Thomas Jefferson in the Capitol," Lewis Abrahams of Washington; "Some Notes on the Jews in Texas," Rev. Henry Cohen, Galveston, Texas;

"First Chapters of New York Jewish History," Albion M. Dyer, New York; "The Jews of Richmond," Jacob Ezekiel, Cincinnati, Ohio; "Notes on the Jews in Louisiana," Prof. R. Gottheil, New York; "Notes on the Jews of Jamaica," and "A Prayer Delivered in the Synagogue in New York, 1760," Dr. Herbert Friedenwald, Philadelphia; "A Few Extracts from the Life and Revolutionary Services of Col. Isaac Franks," George W. Hufnogle, New Hope, Pa.; "The Earliest Rabbis and Jewish Authors in America," Dr. M. Kayserling, Budapest, Hungary; "Phases of Jewish Life in New York before 1800," and "Incidents Illustrative of American Jewish Patriotism," Max J. Kohler, New York; "Some Notes on the Jews of Georgia and South Carolina," "Isaac de Castro Tortas and Joseph Antonio de Silva—two South American Martyrs," "A Contribution to the History of the Jews in Jamaica and Barbadoes," "Early Jewish Literature in America—an Attempt at a Bibliography," George A. Kohut, New York; "The Levy and Seixas Families of Newport and New York," N. Taylor Phillips, New York; "The American Jewish Soldier," Simon Wolf, Washington, D. C.

The American Historical Association commenced its tenth annual meeting in this city December 26th. Mr. Justin Winsor presided in the absence of Mr. Henry Adams. A letter from President Adams was read, in which he alluded to his earnest desire to get the Association together on a new basis, and went on to speak of the possibility of the establishment of history as a fixed science.

Mr. Rossiter Johnson, of New York, read a paper of

unusual interest on the turning points in the American civil war. He said that he believed that in the highest sense there was no such turning point; that the struggle must in any case have ended in the preservation of the Union; but that there were certain secondary turning points that determined the nature and duration of the conflict. These he named as follows: First, Kentucky's refusal to secede, which deprived the Confederates of the natural line of defense along the Ohio River; second, the battle of Bull Run, which confirmed the Southern people in their belief in their superior prowess and certainty of success; third, the Emancipation Proclamation, which placed the struggle on its true issue; fourth, the battle of Gettysburg, which ended any hope of carrying the war into the North; fifth, the re-election of President Lincoln, which decided that there should be no cessation of hostilities till the Confederacy ceased to exist. Had all these causes failed except the last, Dr. Johnson said the good judgment of the American people would have still so emphatically expressed itself that the great rebellion could not have ended otherwise than it did.

A paper read by Mrs. Lee C. Harby, of New York, proved to be the only connected narrative which has been written on the habits, government and superstitions of the Tejas Indians, who formerly inhabited an enormous extent of territory covering nearly all of that vast stretch of country which is now called Texas, and who possessed the distinguishing excellence of having been always friendly to the white man.

Prof. George Parker Winship, of Harvard, told the Association why Coronado led the Spanish expedition to New Mexico in 1540.

Mr. Bernard Moses, of the University of California, gave an account of the Spanish office of colonial administration during the time when the Spanish holdings in America required special care at the seat of the Home Government. He called this establishment the "India Office" of Spain, and described its vast system of accounts, inspection and finance, and its downfall.

Prof. J. S. Bassett, of Trinity College, read a paper based on new points found in the recently published colonial records of North Carolina concerning the Regulators of North Carolina in 1766–71. He claimed that the regulators' was only a peasants' rising, and not an attempted revolution, and that it was due to economic and political rather than to religious causes.

Dr. Edward Friedenwald, of Philadelphia, contributed a paper on the Continental Congress which he justly termed "a neglected portion of American Revolutionary history." That Congress, he said, arouses unique interest in American history as the dictating head of the great war that was to establish the United States among the nations of the world. It combined all the functions of a legislative, executive and judicial body, and exercised them at various times.

Three papers on Rhode Island history were given in turn, beginning with one by Prof. H. D. Hazeltine, of Brown University, on "Appeals from Rhode Island Courts to the King in Council." Prof. F. G. Bates, of Cornell, followed with an explanation of the opposition of Rhode Island to the impost duty of 1781; and lastly, Prof. A. M. Mowry, of Harvard, gave some new light on the constitutional controversy in Rhode Island in 1841.

Pennsylvania came in for two discourses by Prof. S. B. Harding, of Harvard, and S. M. Sener, of Lancaster, respectively. The former wrote on "Party struggles over the Pennsylvania Constitution, 1775–1790," and the latter on "The language, manners and history of the Pennsylvania Germans." Both these papers were exceedingly interesting.

The last discourse before the Association was on the question, "What has the United States done for history?" which was partially answered by Mr. A. Howard Clarke.

Hon. George F. Hoar, of Massachusetts, was elected president for the coming year.

The American Folk-Lore Society began its sixth annual session in Washington, December 27th. It has a membership of five hundred, bristling with enthusiasts in this interesting line of study. It publishes the Journal of American Folk-Lore, and has produced two volumes of Memoirs. There are several local branches of the Society in different parts of the country.

There were present on this occasion, Dr. Washington Matthews, U. S. A.; W. W. Newell, and M. H. Saville, of Cambridge; Capt. J. G. Bourke, U. S. A.; Dr. H. Carrington Bolton, Major Powell, Prof. O. T. Mason, J. O. Dorsey and F. H. Cushing, D. G. Brinton, F. W. Putnam and others. Dr. Matthews read a paper on "A Navahoe Myth," Mr. Cushing one on "Folk-Lore Concepts," Mr. Newell one on "Theories of the diffusion of Folk Tales," Dr. Fewkes gave "Illustrations of the Cortes Codex," and Capt. Moten, "Negro Corn Songs." At an evening session Indian songs were reproduced from a phonograph, the songs

having been procured by Dr. Matthews, folk-lore songs by Mr. Cushing, Indian songs by Alice Fletcher and Mr. Laflesche, the latter a member of the Omaha tribe of Indians. Papers at following sessions were read by Zelia Nuttall, Stewart Culin, Mrs. F. D. Bergen, Dr. G. A. Dorsey, Miss Helen Douglas, Dr. Thomas Wilson and H. H. Kidder.

The American Society of Church History, organized in 1888, convened here in annual session, December 27th. Bishop Hurst, the President of the Society, gave a review of the progress of Church History in Germany, France, Great Britain and the United States. He called attention to the fact that of the important series of the Histories of the Church in the United States ordered by the Society four years ago, seven of the thirteen volumes have already appeared and received recognition in this country and in Europe. Prof. George P. Fisher read an essay on Philip Schaff. The meetings of the Society were largely occupied in informal discussion of the literature of church history.

The American Forestry Association, having for its object the preservation of the forests of the country, convened its thirteenth annual meeting in this city, December 28th.

OBITUARY.—The late Garrick Mallery, U. S. A., was in the foremost rank among ethnologists. His researches into the history, manners and literature of the American aborigines were exhaustive, and gave him a prominent name in the scientific world. His active interest in this field of research seems to date

from about the year 1876, when, having been assigned to the first United States Infantry, he was ordered to Fort Rice, Dakota Territory. Here he made investigations, under favorable conditions, into the sign language, pictographs and mythologies of the North American Indians. The results of these researches gave him great distinction as an original investigator; and having been retired from the army in 1879 for disabilities incurred in the line of duty, he accepted the appointment of Ethnologist in the Bureau of Ethnology.

Colonel Mallery was a direct descendant from Peter Mallery, who arrived in Boston from England in 1638. Several of his ancestors were military officers in the colonial service and in the Revolutionary war. Through his mother he was descended from John Harris, founder of Harrisburg, and William Maclay, first U. S. Senator from Pennsylvania. He was a graduate of Yale, and received the degree of LL.D. from the University of Pennsylvania. He was in active army service from 1861 to 1864, and at one time was acting Governor of Virginia. He was founder of the Anthropological Society; vice-president of the American Association for the Advancement of Science; president of the joint commission of the five scientific societies of Washington; founder and president of the local Yale Alumni Association; and formerly president of the Philosophical Society and of the Literary Society, and of the Cosmos Club of Washington. Through his eminent services in the late war, through his contributions to literature, and especially to a better understanding of the life and manners of the Indians of North America.

through his interest and active participation in projects requiring faithful duty, eminent ability and the confidence of his associates he accomplished much for the advantage of mankind.

His published writings are: (1) The former and present number of our Indians, 1877. (2) A calendar of the Dakota Nation, 1877. (3) Some common errors respecting the North American Indians, 1878. (4) The sign-language of the North American Indians, 1880. (5) A collection of gesture-signs and signals of North American Indians, with some comparisons, 1880. (6) Introduction to the study of sign-language among the North American Indians as illustrating the gesture speech of mankind, 1880. (7) Sign language among North American Indians compared with that among other peoples and deaf and dumb mutes, 1881. (8) The gesture speech of man, 1881. (9) The sign-language of the Indians of the upper Missouri in 1832, 1883. (10) Pictographs of the North American Indians, 1886. (11) Manners and meals, 1888. (12.) Philosophy and specialties, 1888. (13) Israelite and Indian, 1889. (14) Social history of the races of mankind, by A. Featherman (a review), 1889. (15) Customs of courtesy, 1890. (16) The fight with the giant witch, 1890. (17) A German edition of Israelite and Indian, printed in Leipzig, 1891. (18) Greeting by gesture, 1891. (19) A philosophical phantasy (Poem), 1893. (20) Picture writing among American Indians, 1893. (21) Spurious symbolism. (22) His last bachelor trip (Poem). There is also an unfinished work which will be published by the Bureau of Ethnology.

H.

OBITUARY.

FERDINAND DE LESSEPS.

M. de Lesseps died at his home of La Chénaie, on the 7th of December, at the age of 89 years.

He was born at Versailles Nov. 19, 1805, and was 20 years old when he entered public life in the consulate at Lisbon. Thence he was transferred to Tunis, and a year later to Alexandria, where he remained till 1838, when he was appointed Consul at Rotterdam.

In 1839 he was removed to Malaga, and three years later to Barcelona, where he remained till the Government of the Republic sent him as Minister Plenipotentiary to Madrid. Charged in 1849 with a special mission to the Roman Republic, M. de Lesseps had the independence and courage to report to his Government, not what he was expected to find, but what he found. He was recalled; and he made no further attempt to pursue a diplomatic career.

The idea of a canal between the Mediterranean and the Red Sea, conceived during his residence in Egypt and never abandoned, now took full possession of his mind.

The story of the next twenty years, closed by the inauguration of the Suez Canal in November, 1869, is familiar to the world; but it is not always remembered as it should be, that if ever a great enterprise could be called the work of one man, the Suez Canal was from the beginning to the end the work of Ferdinand de

Lesseps. From the very outset he encountered ridicule and indifference and determined hostility, but his resources of faith and energy were not to be exhausted and, one after another, he bore down all the obstacles in his way. Nothing can dim the splendour of his achievement; and the calamity of his later years deserves the respectful sympathy of mankind.